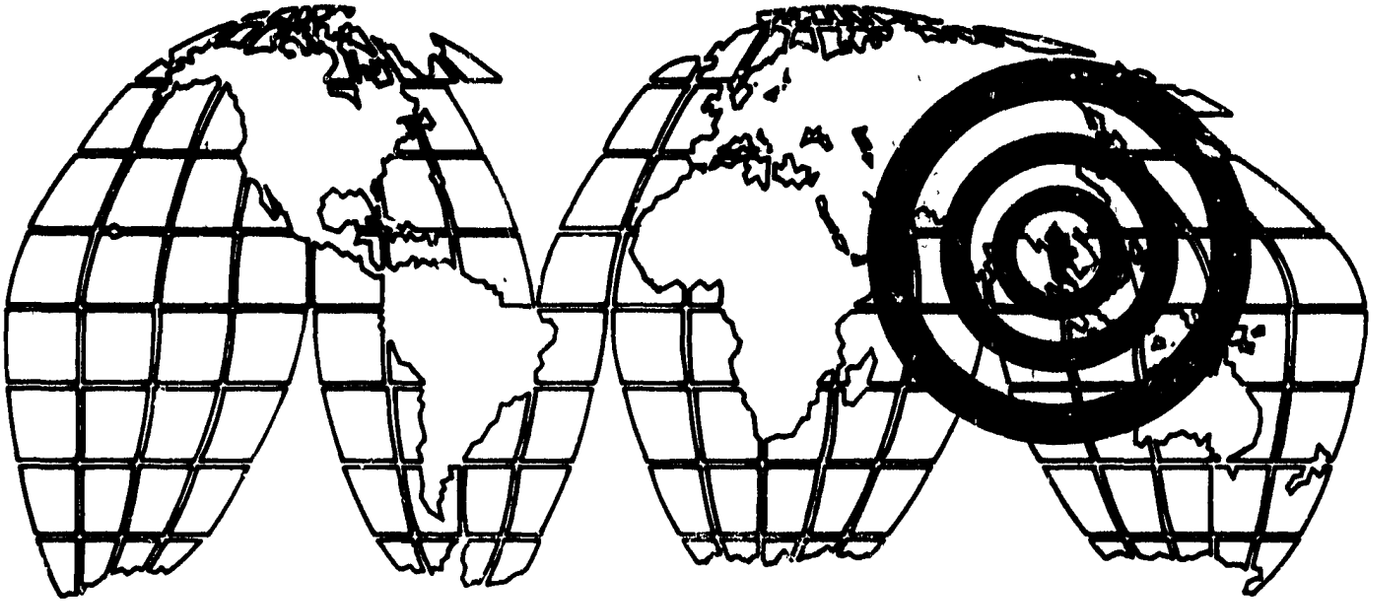
A.I.D. Project Impact Evaluation Report No. 34

Agricultural Research In Northeastern Thailand



May 1982

U.S. Agency for International Development (AID)

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AGRICULTURAL RESEARCH IN NORTHEASTERN THAILAND

PROJECT IMPACT EVALUATION NO. 34

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TABLE OF CONTENTS

FOREWORD

In October 1979 the Administrator of the Agency for International Development initiated an Agency-wide ex-post evaluation system focusing on the impact of AID-funded projects. These impact evaluations are concentrated in particular substantive areas as determined by A.I.D.'s most senior executives. The evaluations are to be performed largely by Agency personnel and result in a series of studies that, by virtue of their comparability in scope, will ensure cumulative findings of use of the Agency and the larger development community. This study of the impact of Agricultural Research in Northeast Thailand was undertaken as part of this effort. A final evaluation report will summarize and analyze the results of all of the studies in each sector, and relate them to program, policy and design requirements.

SUMMARY

The Ministry of Agriculture and Cooperatives in Thailand officially established an agricultural research center at Tha Phra near Khon Kaen, located 400 kilometers from Bangkok, in 1962. The Center was to be a multidisciplinary research facility focusing on the Northeastern region and responsive to the needs of the farmers. In addition, it was to support and coordinate the work of the Ministry's 112 small research centers and stations in Northeastern Thailand.

USAID/Bangkok first assisted this project in the mid-1960s by providing graduate training to 24 Ministry employees who were to staff the Center. In 1966, a multifaceted project was launched for institution building at the Center. A contract was signed with the University of Kentucky (UK), Lexington, Kentucky, and from 1966 to 1975 Kentucky Project officials were responsible for (1) advising Center administrators; (2) arranging for training employees in the United States; (3) assisting in the establishment of research laboratories, research programs, and extension activities; and (4) coordinating functions at the Center.

An excellent physical facility was constructed which has been carefully maintained. Since 1966, a total of 118 Ministry employees have received U.S. training in agricultural disciplines mostly at UK. By 1975, laboratories were well established and substantial research work was underway. However, since 1975, research programs have been reduced and the professional staff of the Center is far below projected numbers. The research carried out is essentially conventional and laboratory- or station-focused; there is little evidence that it is responsive to the needs of small farmers in Northeastern Thailand.

Kentucky Project extension and training activities started slowly, but since 1975, several initiatives have been launched. These include a series of television and radio programs, a mobile extension unit, and an agricultural information network. These initiatives were not planned at the beginning of the project. However, these activities and their support units, at the time of review, were the most dynamic at the Center. Modest USAID support to these programs could do much to enhance the quality and quantity of agricultural information available to Northeastern farmers.

Scientists at the Center need to familiarize themselves with the complexities of agricultural production and decision-making in the Northeast. This could contribute to future research activities and outreach programs which are more relevant to the needs of a greater variety of farmers. Furthermore,

bureaucratic conflict has created an atmosphere in which much research done at the Center is rejected out of hand by the central Ministry of Agriculture and often has to be redone in order to be acceptable. Declining budgets, loss of coordinating authority, frequent institutional redefinition, and loss of status and professional autonomy have combined with previously mentioned factors to defeat efforts to build a major research capacity in Northeastern Thailand.

Ministry, USAID, and University of Kentucky Project officials chose not to reexamine and reformulate the project, in spite of ample, early evidence that the Center lacked sufficient bureaucratic potency to accomplish its long range goals. It seems unlikely that more detailed planning could have pinpointed and overcome this problem. However, AID officials should have recognized the problem by the late 1960s and done something about it. They could have (1) pulled out, (2) decided to support only the most promising portions of the project (e.g., the training component), or (3) worked with the Ministry to strengthen the bureaucratic position of the Center. That none of these things happened reflects negatively on responsible USAID officials, but perhaps more so on AID structures and procedures. (See Appendix C for a more detailed discussion of AID incentive structures.) These may have discouraged Mission officials from reexamining projects and making mid-course corrections 10 years ago. Whether or not there have been sufficient changes in incentive structures to encourage them to do so today remains to be seen.

Project Data Sheet

1. Country: Thailand

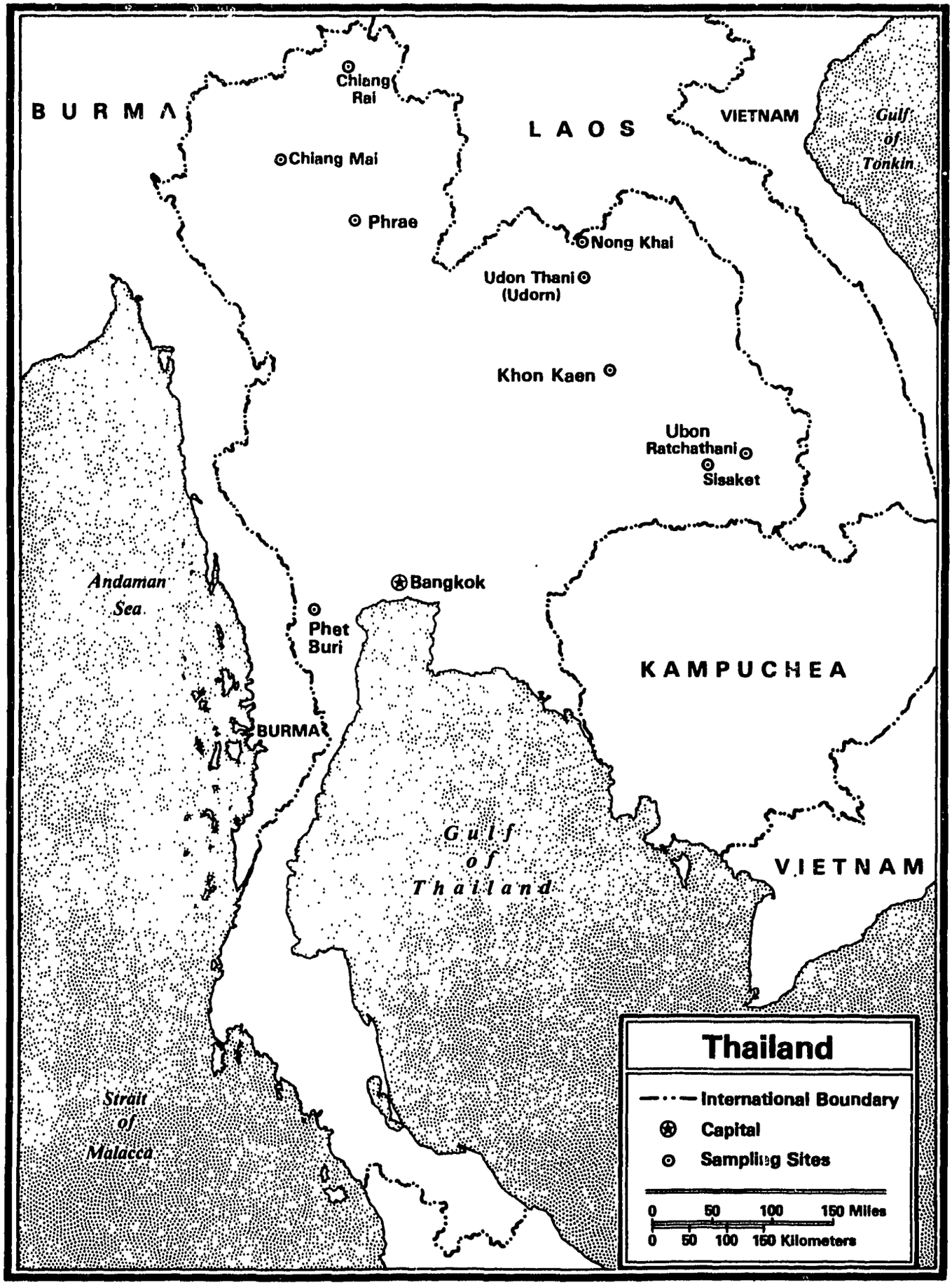
2. Project Title: Agricultural Development-Agricultural Research

3. Project Number: 493-11-190-180.2

4. Project Implementation:
   a. Project Proposal, 1965
   b. Grant Agreement, 1966
   c. Final Obligation, June 30, 1975

5. Project Funding:

a. AID	$ 6,272,000
b. RTG Counterpart Budget	$ 3,022,000
c. RTG National Budget	$ 3,806,000
	$13,100,000


BURMA
Chiang Rai
LAOS
VIETNAM
Gulf of Tonkin
Chiang Mai
Phrae
Nong Khai
Udon Thani (Udorn)
Khon Kaen
Ubon Ratchathani
Sisaket
Andaman Sea
Bangkok
Phet Buri
KAMPUCHEA
BURMA
Gulf of Thailand
VIETNAM
Strait of Malacca
Thailand
International Boundary
Capital
Sampling Sites
0 50 100 150 Miles
0 50 100 150 Kilometers

I. PROJECT SETTING AND DESCRIPTION

A. Northeastern Thailand

Even short-term visitors to Northeastern Thailand are impressed by the innovativeness, creativity, and energetic optimism of local residents. Their dynamism is evidenced by innovations in agriculture, transportation, marketing, and other sectors. In recent years, there has been rapid acceptance of new cash crops--cassava, kenaf, sugar cane, tobacco. Highways are crowded with "intermediate" transport services, relying on motorized pedicabs and trucks powered by irrigation pump engines. Small-scale enterprises are encountered in many towns and villages. Large numbers of cattle are raised, many for sale to other regions of Thailand. Migration in search of expanded economic opportunity is commonplace. New immigrants (from other Northeastern provinces) and recent emigrants (who have traveled outside to jobs in Bangkok or the Arabian Peninsula) can be found in virtually any village.

On the other hand, this region of 16 provinces and 15 million people is culturally isolated, politically disadvantaged, and relatively poor. Its people have the lowest per capita incomes of any of Thailand's four major regions. Most residents speak Lao, rather than Central Thai, as their first language, and consider themselves to be culturally distinct from residents of other regions. Few Northeasterners rise to positions of national prominence or political power. Little land is irrigated and generally poor soil conditions are aggravated by unstable rainfall patterns. Crop yields are generally low. Most farming households still regard rice production--usually a single, rain-fed crop--as the essential core of their agricultural activity.

In order to attack some of the problems described above and, perhaps, to capitalize on the receptivity and dynamism of the region's people, in 1962 the Thai government chartered a major agricultural center to be located at Tha Phra, Khon Kaen Province.

B. The Project

The Thai Ministry of Agriculture and Cooperatives (MOAC) established the Center at Tha Phra, 10 kilometers south of Khon Kaen, as its major agricultural research and administrative facility in the Northeast. Its general purpose was to support government agricultural sector objectives in the region, including increased productivity, diversified and balanced production, and development of remote rural areas. Its staff was expected to (1) carry out research at the Center; (2) support

and coordinate the activities of small agricultural research stations already located throughout the Northeast; (3) provide laboratory facilities and testing services (for soil, fertilizer, and feeds) to employees of other Ministry of Agriculture and Cooperatives Departments as required; (4) provide services to the public and other government units in such areas as training, extension, and demonstrations; and (5) collect and diffuse data on agricultural production and marketing. In a decision of pivotal significance, the Center was placed under the administrative control of the Office of the Under Secretary of State for Agriculture.

The Center was initially staffed (1964-1966) with personnel from existing Ministry Departments, including Rice, Livestock Development, Agriculture, Forestry, Fisheries, and the Office of Agricultural Economics.[1] During this period, the Thai government approached USAID in Bangkok to request support for research, training, and facilities development. Following a visit by representatives of the University of Kentucky in 1966, a contract between the University of Kentucky, USAID, and the Ministry of Agriculture and Cooperatives was signed in early 1967 and made retroactive to July 1, 1966. The contract terminated June 30, 1975 after nine years of support.

Total USAID funds expended over the life of the contract approximated $6,545,000, while Thai government contributions during the equivalent period totaled $5,345,000. The University of Kentucky/USAID/Ministry contract was the major component of the AID budget; research equipment accounted for the remainder.

C. The Administrative Setting of the Center

The Tha Phra Center is a single unit within the Ministry of Agriculture and Cooperatives' large, complex research system. Adequate analysis of how the Center has fared administratively depends on some understanding of that system. The Ministry of Agriculture and Cooperatives is the Thai government organization primarily responsible for planning, implementing, and evaluating agricultural research and development programs in Thailand. Other public agencies with more limited responsibilities in this area include the Universities; the Community Development Department, Office of Accelerated Rural Development and the Department of Public Welfare in the Ministry of

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[1] The Rice Department was reduced to Division status in 1972 and merged with the Agriculture Department. The Department of Agricultural Extension was formerly a Division within the Agricultural Department. It was given separate departmental status in 1972.

Interior; and parastatal organizations concerned with rubber production, dairy farming, forest industry, and commodity marketing.

Some Ministry Departments are organized by commodity--forestry, livestock, and fisheries--and some along functional lines--extension, irrigation, agriculture, livestock development, cooperative promotion, and cooperative auditing. In addition, three offices have department status: land reform, agricultural economics, and the Under Secretary of State for Agriculture. Substantial research work is performed within the Departments of Agriculture, Forestry, Livestock, Fisheries, and the Office of Agricultural Economics. Limited research is carried out by personnel of the Departments of Extension, Irrigation, and Land Development.

Each Ministry Department is commanded by a Director-General, while the Offices of Land Reform and Agricultural Economics are each administered by a Secretary-General. The Under Secretary of State for Agriculture has Ministry-wide administrative duties, but occupies a position in the hierarchy equivalent to that of the Director-Generals.. Each department or office has Bangkok and field-based staff divided into a series of smaller units. Field staff work in a service or operational unit, with the Chief reporting through intradepartmental lines to the Director-General in Bangkok. Major decisions on policy, appointments, and promotions are made by the Chief.

There is no formal layer of authority between the central administration in Bangkok and provincial administrations throughout the country. Six Ministry departments and offices have perceived this as an administrative void and established regional offices to coordinate, supervise, and service various offices, centers, stations, and units operating in a specified group of provinces. The Departments of Irrigation, Forestry, Livestock, Extension, and Cooperative Promotion all have regional offices with clearly defined, intradepartment responsibilities and functions.

In 1963, the Ministry began to set up regional centers which were to coordinate activities across department boundaries. The Center at Tha Phra and another Center (for Central Thailand) at Chainat were the first of these. A Center for the North was established at Chiang Mai in 1973 and a Center for the South was set up at Songkla in 1977. Each Center was given responsibilities in research and extension. However, it was unclear how activities in these areas would mesh with related work in other departments and offices. In addition, the Centers had, until recently, a loosely defined mandate to support and coordinate research efforts in their respective regions.

The notion of a regional research center is immensely attractive. Thailand's four geographic regions--Center, Northeast, North, and South--have physical, agronomic, and socioeconomic characteristics which mark them as unique. Interdisciplinary research centers located within regions and focused on unique problems make a lot of sense. The attraction of this idea is further enhanced if it is also seen as a solution to bureaucratic impediments--overcentralization of Ministry personnel in Bangkok, excessive hierarchy, lack of communication and cooperation between departments, bureaucratic infighting, and lack of contact with farmers.

Speculation about "bureaucratic psychology" is risky. However, it seems a reasonable hypothesis that when the Ministry began to commit land, personnel, and other resources to the Center at Tha Phra in the mid-1960s, there was general recognition of the potential value of regional offices; i.e., in the beginning, the notion was attractive inside the Ministry as well as to outside donors. Unfortunately, now all of the Centers are faced with chronic problems of role definition, legal status, legitimacy within the research community, administrative ambivalence, and low staff morale. Basically, they have run afoul of the bureaucratic impediments they were supposed to overcome. Efforts to coordinate activities across department boundaries have been undercut by rivalries and jealousies between departments.

D. Evaluation Focus and Objectives

USAID planning documents from the 1960s proposed a straightforward research support program with emphasis on institution building. The initial objectives were broad but clear, and form a framework against which major portions of the project can be evaluated. First, there are strategic objectives:

- To increase the productivity of Northeastern agriculture
- To diversify and balance production
- To overcome poverty and neglect in rural areas

These objectives were to be achieved through:

- Construction of research facilities
- Staffing and organization of the Center
- Staff training
- Development and execution of research programs
- Publication of results
- Establishment of an extension program

After examination of numerous documents, interviews with Tha Phra employees and other Ministry officials, and a field visit to villages in four Northeastern provinces, we are able to offer tentative findings concerning the Center's success in meeting most of these objectives. However, our evaluation is not limited to these findings. First, we found research activity at the Center to be far below levels envisioned in planning documents of the late 1960s. We offer an institutional analysis of why this is true. Second, some of the most interesting, promising activities of the Center were unanticipated in USAID and University of Kentucky planning documents. We describe these activities and attempt to assess their impact on agricultural and rural life in the Northeast.

Our evaluation results are presented in three sections: (1) an analysis of efforts in institution building, (2) findings concerning the impact of the project on specific clients and on the Northeast in general, and (3) "lessons learned."

II. AN ANALYSIS OF EFFORTS IN INSTITUTION BUILDING

A. Bureaucratic Influences From the Ministry

1. Facility and Staffing

At Tha Phra, the plan was to build a new research facility. A total of 50 buildings were constructed in the research facility, as well as 70 houses for professional and support staff laboratories were fully equipped. The entire facility has been well-maintained.

Initially the Center was staffed with personnel seconded from Ministry departments and offices. A permanent research and administrative staff was to be established gradually, primarily from individuals trained under the University of Kentucky Project. Project documents projected a total professional staff of 131. In February 1981 there were fewer than 30 professionals employed at the Center.

Those seconded from Ministry departments and offices were required to serve one year at Tha Phra before training, and approximately two years at Tha Phra after training for each year spent in training. They signed an agreement with USAID and the Ministry to this effect. In addition, recent agricultural graduates were recruited directly to the staff of the Center. They, too, received advanced training and were expected to join the staff on a permanent basis.

Seconded department staff and Center employees were expected to work together and in conjunction with University of Kentucky advisors in ongoing research and extension programs. At some future date, the Center was to have a permanent, well-trained staff of its own. Seconded staff were to return to their original units better trained and more sensitive to problems and research needs in the Northeast.

Research during the institution-building phase was to be of two types--department-initiated and Center-initiated. By the early 1970s, a substantial research program was underway. However, at the outset of the Kentucky Project, no Center employees had been appointed. Thus, at this important stage, lines of authority extended from Departmental offices in Bangkok into the various research subunits. The Center Director had little control over his ostensible subordinates.

2. Policy Impact

Since completion of the Kentucky Project, research at the Center has been de-emphasized, while new responsibilities in rural development planning and implementation have been conferred. In 1976, a major change in policy toward rural development was implemented. Emphasis was on decentralization and regionalization of authority in order to bring government services in closer contact with rural people. The Center was now to be a focal point for planning, coordinating, catalyzing, supporting, accelerating, and evaluating the work of Ministry agencies. Research and extension activities carried out previously were not specifically banned nor proscribed. This change was made official 13 months after completion of the University of Kentucky/USAID/Ministry contract, and has significantly undercut intended impacts of the USAID project.

Finally, in May 1978, further changes were made under a cabinet order that limited the Center's role to catalyzing, coordinating, and integrating agricultural development activities carried out by Ministry agencies. Initiation of research and implementation of development projects were specifically proscribed.

Later in 1978, the Agricultural Policy and Development Planning Committee was set up and began to function. Many of the Committee's explicit functions overlap those of the Regional Offices of Agriculture, and it remains to be seen how this committee's activities will affect the regional offices.

3. Cost

Budgetary support for the Tha Phra Center indicates that its bureaucratic position is not particularly strong. For example, in 1975 (the last year of the Kentucky Project), the Ministry's contribution was $614,000. By 1978 (during a period of significant inflation), the contribution was only $495,000. (See Appendix B, Table B-2.)

B. The Problem of Bureaucratic Impotence

The organizational and institutional framework of the Center and its activities in the Northeast remained reasonably stable during the period 1966-1975. Progress was made in establishing a research facility, training staff, and conducting research. Informants at the Center, and in other Ministry of Agriculture departments report that good scientist-to-scientist relations developed between department and Center personnel. Useful service functions were initiated, including testing services for soil, plants, seeds, and fertilizer. Hundreds of extension personnel and farmers were trained at the Center.

However, there is ample evidence of bureaucratic impotence throughout the period. That is, the Center had little power to resist bureaucratic initiatives by other departments in the Ministry even when these severely limited or hampered its institution-building goals. This was a logical consequence of the Center's unfortunate placement within the Ministry's hierarchy. For apparently sensible reasons, all four regional Centers were attached to the office of the Under Secretary of State. This unit has broad administrative responsibilities, but does not ordinarily work in research or extension. The official intent was to provide a position from which regional coordination could be readily achieved. In retrospect, this approach was bureaucratically naive and placed the Centers in an untenable position. Officials in research- and extension-oriented Departments (Agriculture, Livestock, Fisheries, Forestry, Irrigation, Extension, Agricultural Economics) have sought to undercut the Centers almost from the beginning. Before 1975, resources at Tha Phra were subtly diverted and captured. Since then, there have been direct attacks on budgets and institutional autonomy.

Institutional problems can be detected "between the lines" of Kentucky Project reports and in USAID documents as early as 1969. For example, in July 1969, USAID officials revealed that:

> Two related problems are the legal status of the ACNE [the Tha Phra Center] and its inadequate number of civil

service positions. The Royal Decree which will provide legal status for the Center has not yet been signed. Perhaps as a consequence, the Center does not have all the civil service positions it needs. This means that personnel aspiring to civil service status are reluctant to accept assignment to the Center, and MOA departments are reluctant to transfer top personnel with civil service status to the Center because they fear they will "lose" both the personnel and the civil service positions.[2]

The following institutional factors appear to have played significant roles in the evolution of the Center toward its present semi-moribund state:

1. Legal status and bureaucratic legitimacy of the Center--The Center has existed for about 18 years without statutory legitimization. We are unclear as to how legitimization can be achieved--i.e., by what combination of parliamentary support, cabinet decision, and royal decree--but we are aware that no single legal pronouncement can restore, or award for the first time, bureaucratic potency to the Center. However, it is clear that University of Kentucky officials attributed considerable importance to this step, perhaps as a symbol of reliable support at the highest levels and an assured position in the intra-Ministry power "game."

2. Lines of authority and budget--Senior staff members seconded to administrative positions (Deputy Director, Division Chiefs, etc.) continued to report directly to their respective Director-Generals. They controlled budgets and personnel, and thus enjoyed considerable autonomy in setting research priorities. Under these circumstances, convergence of research goals with the "mission" of the Center (and the needs of Northeastern Thailand) was not impossible, but rather unlikely.

3. Unsatisfactory incentive systems for non-Center personnel--At the same time, senior employees seconded from the departments had reason for disgruntlement. In Khon Kaen, they worked in isolation from department superiors and contemporaries. Members of this group feel that they were given inadequate consideration in matters of promotion and merit salary increases. One informant worked at Tha Phra for eight years without a double step increase, so that his salary fell far behind those of his contemporaries.

4. Lack of commitment in Departments and Offices--Although some senior officials seconded to the Center were clearly quite talented, there is a general feeling (at the

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[2] Project Paper (PROP)--Agricultural Research, July 18, 1969.

Center, at higher levels of the Ministry, and among University of Kentucky staff) that departments did not always send their brightest, most dynamic senior employees. On the other hand, junior employees sent to the Center were chosen from among those most highly regarded in their bureaucratic cohort, since these individuals could best take advantage of U.S. graduate training offered. However, the departments showed their lack of commitment to Center goals by reassigning these individuals to intradepartmental jobs soon after their return from the United States. This was done in spite of a quasi-legal agreement that trainees had undertaken with the Center, the Kentucky project, and USAID before training was initiated. Officials at the upper levels of the Ministry were unable, or unwilling, to curtail this activity, although it clearly undermined the bureaucratic and scientific viability of the Center.

5. A "protective" role for the Kentucky Project--Although the Center lacked adequate support at the upper levels of the Ministry, it did enjoy a degree of bureaucratic immunity during the period of the Kentucky Project. Kentucky-controlled USAID budgets for training, research equipment, and commodities inhibited maneuvering by departments. But after June 30, 1975, which marked the end of the University of Kentucky involvement, officials moved openly against Center budgets, research programs, and the Center's mandate to define research goals and coordinate research programs.

6. Training and "socialization" of Center researchers--The bureaucratic role of the Center has been redefined. It is now to work largely in planning, coordinating, and (perhaps) implementing rural development efforts in the Northeast. For Center officials who work largely in administration anyway, or who have been able to define appropriate new "niches," this revised definition may be satisfactory. For scientists "socialized" to regard independent, basic, laboratory, or station research as their raison d'etre, the future appears bleak. At present, acceptable Center research activities are limited to:

-- Those carried out at the request, and under the control of, department scientists

-- Those research problems which have been overlooked by research programs within the departments (These, however, must receive the blessing of a department.)

-- Those carried out in collaboration with department scientists who choose to use facilities at the Center for a period of time[3]

Most agricultural scientists (at the Center and elsewhere) would find these conditions to be professionally unacceptable. It was not surprising, then, to learn that several Center scientists are anxious to find positions elsewhere. However, some USAID/Bangkok officials are hopeful that the Center can attain recognition as the major cropping systems research unit in the Northeast, under a current initiative to reorganize research within the Ministry. While this step seems appropriate, it will be meaningless unless accompanied by bureaucratic measures which provide greater institutional autonomy, and special training for scientists in the new research "style" required by cropping systems research.

The following speculation into "bureaucratic psychology" seems appropriate here:

1. As the Center became an administrative reality, officials in other departments came to see it as a competitor for resources (budgets, external aid, personnel, and so on) and also as a locus for exploitable resources (especially training opportunities for young employees). The initial intellectual attraction of the Center concept receded into the background. The net effect of these offsetting forces was that significant research activities at the Center were administratively "doomed" in the late 1960s, but were temporarily protected by a sort of cordon sanitaire until completion of the University of Kentucky project in 1975.

2. Among University of Kentucky officials, doubts about broader impacts and the long term viability of the Center must have arisen at a fairly early date. However, it was relatively easy to overlook these doubts knowing that a functioning research Center would be handed over at the conclusion of the project, and solid accomplishments had been made in establishing training and research.

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[3] These conditions are implied in the National Institute of Development Administration's draft report "A Study of the Role and Functions of Regional Agricultural Offices in Thailand, 1980," in which a planning and coordinating role is recommended for all of the Centers. These specific limitations were described to us by a high official in the Ministry, and seemed to represent evolving policy.

C. Training Component of the Kentucky Project

The Kentucky Project trained 118 people. They earned a total of 2 B.S., 103 M.S, and 35 Ph.D. degrees; 10 individuals received nondegree training (see Appendix E). Center officials were not the major beneficiaries of training under the Kentucky Project. Of 82 officials who could be traced, 33 (40 percent) are employees of the Department of Agriculture, while 22 (27 percent) are presently employed at the Center. Other bureaucratic beneficiaries include six additional departments in the Ministry, two universities, two departments in other ministries, and a major development project.

USAID project documents emphasize establishment of concentrated research capability at Tha Phra. This effort has enjoyed limited success; in addition, those scientists remaining at Tha Phra are severely constrained in their ability to do research by bureaucratic regulations. Of 79 trainees whose present geographic location could be traced, 29 (37 percent) now serve at the Center or at other institutions in the Northeast. Forty-four (56 percent) serve in Bangkok. Traceable Ph.D. recipients are also "concentrated." Sixteen (62 percent) serve in Bangkok and 10 (39 percent) in the Northeast.

On June 30, 1975 the Kentucky Project terminated and the Center was left to fend for itself among the bureaucratic regulations, political pressures, and budgetary struggles of the MOAC. An examination of the status of trained employees from various units within the Ministry is revealing. For example, at this point, 50 Department of Agriculture employees were beneficiaries of training completed or in process. Twelve of these were working, as specified in their training contracts, at the Center. Nineteen more were in training in the United States. The remaining 19 employees had returned to jobs in the Department of Agriculture without fulfilling Center work obligations explicitly stated in contracts prepared by Kentucky Project officials on behalf of USAID.

Similarly, two Department of Fisheries officials were working at the Center, two were in training, and four had returned to jobs in the Department. Most of these individuals were never assigned to the Center even for a "symbolic" few months. Furthermore, if we examine staffing patterns over time, we witness rapid abandonment of the Center by department employees in the months after June 30, 1975.

However, we should not assume lack of positive impact on agricultural research capabilities in Thailand simply because rapid attrition of Departmental staff from the Center has been demonstrated. Looked at in another way, this insight poses an additional evaluation "issue." The largest single bureaucratic/geographic concentration of Project-trained scientists

is not at the Center, but among employees of the Department of Agriculture at Bangkhen, on the outskirts of Bangkok. Exact numbers cannot be assessed, but at least 27 (perhaps as many as 40) Project trainees work there. Most department research and field trials carried out in the Northeast are under the influence or direct control of scientists at Bangkhen. They are responsible for most recent research in the Northeast on rice, cassava, soybeans, peanuts, mung beans, kenaf and jute, cotton, sericulture, fruits and nuts, ornamentals, and vegetables.[4] In addition, Department of Agriculture employees are responsible for all research carried out in the Northeast on sesame, and a substantial portion of the work done in corn and sorghum. It seems clear that Project-trained scientists in the Department of Agriculture will have major influence on crop research in Northeast Thailand over the coming decades. Unfortunately, they will exert their influence from a point hundreds of kilometers outside the region. There is little chance that their work will be directly responsive to the needs of Northeastern farmers.

Examination of individual case histories would probably reveal additional positive impacts. A single example will have to suffice here. Dr. A is an employee of the Department of Agricultural Extension. He was trained under the Kentucky Project, and in 1976, received a Ph.D. in Extension and Continuing Education at Cornell University. He returned to Thailand and was reassigned to a position within his Department. However, his job was pivotal for development efforts in the Northeast. Since his return, he has been responsible for in-service training of provincial, district, and subdistrict extension officers (more than 2,000 individuals). He is hard-working, articulate, and deeply thoughtful in analyzing and prescribing for Northeastern development.

III. PROJECT IMPACT

A. Agricultural Research and Extension: The Ideal Pattern

In recent years, the following sequential pattern has come to be considered essential in getting the results of agricultural research translated into increased productivity:

(i) Basic and applied agricultural research of high quality must be carried out on biological, mechanical, and chemical components of the production process.

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[4] Northeastern Regional Office of Agriculture, A Survey Report on Rainfed Agricultural Projects in Northeast Thailand.

(ii) Research results must be assembled into packages of improved practices ready for testing and modification.

(iii) These packages are then used in verification and validation trials under experimentally controlled conditions at research stations representing a variety of environmental conditions.

(iv) Then there is further testing and observation on farmers' fields representing a variety of microclimatic conditions and farm management practices.

(v) Demonstration plots are arranged so that local farmers are encouraged to adopt the packages.

(vi) Ancillary inputs are provided to allow full benefits of the improved technology.

For this sequence of activities to be effective, strong feedback mechanisms must exist between steps. Research effectiveness depends not only on the strength and quality of activities at each step, but on how well information is transmitted between steps and how successfully the necessary range of disciplinary insights are mobilized. Productive research systems are responsive to local farming conditions, including environmental, edaphic, and socioeconomic factors. In developed countries, this response is achieved through commodity-oriented pressure groups which serve to identify and, in some cases, fund research topics commensurate with national, regional, or local needs. These groups or individuals are frequently involved in stages (iv) to (vi) and provide effective feedback to researchers, administrators, and funding agencies. In most developing countries, research response to local farming conditions is less effective for a variety of reasons. Feedback regarding research needs and priorities seldom comes directly from farmers; rather, "needs" are defined by extension agents, specialists in government agencies, planners, and experiment station scientists, with little or no direct participation by farmers. A perceived need for increasing the relevance of research to small farmers in Northeastern Thailand gave rise to plans for a well-staffed, well-equipped, interdisciplinary research center at Tha Phra.

B. Research at Tha Phra

During the first half of the 1970s, there was a substantial research program at Tha Phra. Judgments as to the quality and impact of that work have been made largely through examination of reports and summary statements produced by University of Kentucky and Center staff. We realize that the

sequential pattern of research and extension described above is the ideal, and we are aware that Center staff have operated in a bureaucratically insecure and politically complex setting. Nevertheless, we have arrived at these tentative judgments:

Research Quality--A large quantity of repetitive and unimaginative research was carried out in the first half of the 1970s. There was little apparent emphasis on long range concerns or basic problems of the Northeast. Kentucky Project Annual Reports mention research quality as an ongoing problem and propose a variety of administrative solutions. A basic hindrance can be found within the structure of the Thai bureaucracy, the Ministry, and the Center. An effective career structure for research scientists does not exist; quality research counts for little in matters of status and promotion.

Research Quantity--Tables 1 and 2 provide an overview of research efforts by commodity and discipline. (For greater detail, see Appendix F.) Since completion of the Kentucky Project, research has dwindled in the face of declining budgets and administrative restrictions. By bowing to pressures from research-oriented departments, Ministry officials have placed Center scientists in the unenviable position of having their work subjected to bureaucratic scrutiny which has little to do with its scientific merit. In the process, emphasis has shifted from field crops to horticulture. Research efforts have not been responsive to shifts in commodity production in the region--e.g., cassava production increased from 341,000 tons in 1970 to more than 9 million tons in 1976, kenaf production dropped by almost 50 percent in the same period, and maize production more than quadrupled. Yet research emphases within the Center research program have not shifted with these new realities.

Research Applicability and Relevance--A major reason for establishing a large research station in the Northeast was to facilitate research uniquely appropriate to the region. This requires regular, high-quality feedback among various phases in the research/extension/production process. Establishment of effective feedback loops has been difficult: Departments have exerted substantial control over their own employees and budgets, and hence, over research priorities; permanent Center staff have lacked access to department plans and concerns; there has apparently been poor communication and limited cooperation among units within the Center. The Center has achieved some positive impact by encouraging Thai staff members to visit farms and listen to farmers, carry out village surveys (on such diverse topics as pesticide use and socioeconomic conditions), and hold field days (at which farmers can observe and discuss ongoing research). However, regular contact between scientists and farmers has never been established as a fundamental of Center strategy or professional norms.

Table 1. Number of Research Projects Conducted by the Center, Separated by Commodities (1967-80)

Commodities	Before 1971	1971-1975	1976-1980
Field Crops	74	255	141
rice	7	36	7
upland rice	2	13	1
corn	4	10	8
kenaf	13	40	56
cassava	--	5	16
sorghum	4	9	3
cotton	4	10	2
sugar cane	--	--	1
mung bean	6	34	9
peanut	17	52	22
soy bean	7	30	6
other upland crop	10	16	10
Vegetables and Fruit Trees	18	61	105
watermelon	4	5	5
tomato	4	11	13
legume	5	5	12
sweet corn	1	4	1
other vegetable	3	25	31
banana	--	3	2
papaya	1	3	11
mango	--	3	9
other fruit tree	--	2	21
Livestock	23	68	71
chicken	12	20	23
duck	--	--	--
pig	1	26	13
cattle	2	5	10
buffalo	2	4	5
other livestock	6	13	20
General	16	67	57
Total	246	835	691

Table 2. Number of Research Projects Conducted by the Center, Separated by Discipline (1967-80)

Discipline	Before 1971	1971-1975	1976-1980
Animal Science	15	54	70
Plant Science			
- field crop	29	91	57
- horticulture	14	45	63
Economies	1	15	3
Engineering	3	9	16
Entomology	16	46	38
Fishery	10	21	27
Forestry	1	7	4
Plant Pathology	24	43	58
Seed Technology	2	46	9
Soil Science	12	61	22
Veterinary Science	3	12	7
Statistics	1	1	--
Extension	--	--	--
Total	131	451	374

The fact that the Center was able to assemble a substantial number of scientists in the Northeast for a number of years is also significant. Through contact with the region, its residents, and fellow scientists while in the region, they presumably have a better sense of research needs and priorities. The Center has oriented its work toward crops and species which can be raised by small farmers. However, this does not assure that benefits will accrue to smaller, poorer farm units. For example, the recent shift toward work on horticultural crops will benefit largely those small farmers who already have superior resource endowments (e.g., capital and water for vegetables, capital and surplus land for fruit trees).

Use of Research by Client Groups--Results of Center research are made available in a variety of ways. Annual Reports summarize results of a large number of projects, but are not widely available. A 10-year summary of research results has been published. Center bulletins summarize results of particular lines of research and recommended production techniques. Our brief survey of Northeastern villages suggests that there has been little direct use of Center research bulletins by farmers in the region. This is not surprising, since rural contact with the Ministry is largely through local representatives of the Department of Agricultural Extension. Extension officials "digest" research results from a variety of sources, including the universities, several departments within the Ministry, and its own modest program of field trials. We were unable to interview sufficient extension officials to gain a firm notion of the contribution of Center-sponsored research to information and recommendations propounded by extension officials. However, those officials we did reach implied that the Center's contributions in this area have been relatively small.

Our impression is that extension of Center-sponsored research results has been largely through Center-sponsored programs--radio and television productions, the marketing newsletter, activities of the mobile unit, and direct correspondence with rural residents. However, it appears that information and recommendations provided are not derived exclusively from Center research. In fact, most are probably gleaned from other sources--from publications of researchers in universities and other Ministry Departments, from Thai-language journals and magazines, or from international publications.

C. Outreach and Extension Activities

At a time when research activities are severely constrained, much of the work of the Center is in extension/outreach activities. Testing services were initiated under the University of Kentucky Program. Other activities--radio and

television productions, the marketing news service, the mobile unit--have been initiated since June 30, 1975. Establishment of the radio/television programs and the mobile unit were unanticipated in USAID project documents; both those two thriving programs should probably be counted among the unanticipated impacts of the project. We cannot, of course, demonstrate conclusively that the Center or training received under the Kentucky Project were essential to establishment of these activities. However, we believe that they were.

Testing Services--The Center provides an important service to farmers, research stations, and private sector participants through testing of soil, fertilizer, and seed samples. A few hundred tests are carried out each year.

Soil Testing--The lab is well-maintained and competently run, though currently understaffed. Samples are used to assess current nutrient status of the soil and to make fertilizer recommendations for specific crops. Farmers send in samples in response to announcements on the Center's radio program or on advice of extension agents. Also, samples come directly from extension agents who conduct on-farm field trials with farmers. Regional field stations of the Departments of Land Development and Agriculture also use this service in support of experimental programs since they lack soil testing facilities. They get much quicker service than can be expected if samples are sent to Bangkok for analysis. Fertilizer recommendations are based on Department of Agriculture recommendations.

Village Chicken Program--This was one of the few field projects being conducted by Center staff. We visited three project villages in Chumpae District, Khon Kaen Province. The program is carried out in cooperation with officials of the Department of Livestock development station at Tha Phra. Project objectives include: upgrading the native chicken population by introducing improved native roosters from the Center, effecting small changes in feeding practices, and conducting village-wide vaccinations against Newscattle, fowl cholera, and infective bronchitis.

During the program, total chicken population held by 112 cooperating farm families has increased by about 20 percent, mainly through reduction in deaths from the diseases mentioned above. Thus far, the project appears to have enjoyed modest success, although in the long term, its effect may be negative; Center funding of the program has stopped, and Newscattle disease has started to affect some local flocks which are now presumably more susceptible to the disease through loss of natural immunity mechanisms. No local vaccinators have been trained to continue the program. The Center has applied to the Province for future funding of the program, but even if support is received, the time lag will probably be sufficient to

severely reduce local flocks. Our most optimistic judgment is that an essentially new project can be initiated at the present site. However, area residents may be unwilling to cooperate in future projects.

Mobile Unit--The Center's Mobile Unit has been in operation since 1979, four years after completion of the Kentucky Project. It is supervised directly from the Director's office. Equipment used by the unit--a Toyota Hiace minibus, display tables and stands, audiovisual equipment--are borrowed from the regional Agricultural Extension office. (This office apparently mounted an earlier, unsuccessful attempt to establish its own mobile unit; there are indications that the equipment is provided grudgingly.) In addition, Center officials are accompanied by local extension officers when they visit villages.

Center officials send out letters announcing the availability of the unit to subdistrict and village headmen, head teachers, and leaders of local farmer groups. The Mobile Unit visits only those villages from which it receives a written invitation. In 1980, the unit visited 43 villages in 13 Northeastern provinces for daylong sessions. Presentations include: demonstrations, films, lectures, question and answer sessions, and distribution of leaflets and seeds. Topics covered include crop, livestock, and fish production. In 1980, more than 10,000 villagers attended these sessions. Large quantities of improved seed and pamphlets were distributed.

Near the end of each visit, questionnaires are distributed to about 20 percent of those remaining in the audience. The questions are biased, but replies suggest that Mobile Unit visits are much appreciated by village audiences.

Television and Radio Programs--In 1977, a public outreach unit was established at the Center. Under its energetic director, and with a total staff of five, this unit accomplishes a great deal. It produces several television and radio programs; distributes pamphlets in response to written requests; and receives, reads, transcribes, and answers many letters each month. Three different television programs are broadcast over Channel 5, Khon Kaen. Four radio programs are broadcast from stations at Khon Kaen and Maha Sarakham.

Marketing Information Services--Agricultural economists at the Center collect data on agricultural commodity and input at several locations in the Northeast on a weekly basis. Limited price data are presented each evening on the five minute "News for Farmers" program. A more comprehensive summary of price data is offered in the weekly Marketing Information Bulletin sent to 600 addresses in the Northeast. Recipients include farmers, traders, officials, and farmer groups. There is no

subscription fee. Price data are collected at seven locations and include farmgate and market prices for glutinous and non-glutinous rice, cassava, kenaf, silk thread, cattle, buffalo, pigs, chickens, eggs, and several vegetable crops. Data are also provided on such products as rice bran, broken rice, and several types of fertilizer, and insecticide.

Training Activities--The Center also maintains an impressive training facility, built with USAID assistance. There is dormitory space for nearly 100 individuals, a large lecture/ceremonial hall, and a few smaller rooms. The facility is used frequently, but most often by other bureaucratic units. When we visited in February 1981, training was being provided to a group of subdistrict extension officers by the regional agricultural extension office. Scheduling for the training facility is coordinated by the Center office responsible for radio and TV production. Center scientists sometimes deliver lectures to training sessions.

D. Village Survey

Table 3 summarizes the results of our brief village survey. (For an overview of field survey methods and a copy of the interview schedule, see Appendix A.) Examination of the results suggests that there is some familiarity with Center programs in rural Northeastern Thailand, even at locations 100-200 km. distant from Tha Phra.

-- We found a single respondent, in Chumphae District, Khon Kaen Province, who had attended a training course at the Center. However, since the respondent lives in a village where the Center is implementing a program to improve native chicken production, it seems likely that the initial contact was made through this program.

-- Respondents from as far away as Sakhon Nakhon (200 km) Roi-Et (120 km), and Chumphae District (80 km.) have visited the Center. Some have sought out individual scientists for advice, others have visited during agricultural field days.

-- A few respondents have seen, and in some cases, read agricultural bulletins produced at the Center. It appears that most of these reach rural areas when distributed by Mobile Unit personnel. However, these pamphlets are frequently mentioned on Center Radio programs, and Center personnel respond to numerous written requests for them.

Table 3. Results of a Village Survey*

	Question	Response	Portion of Total Response
1.	Has Respondent Received Training at Tha Phra Center?	Yes = 1	1.9
		No = 51	96.2
		No Response = 1	1.9
2.	Has Respondent Visited the Tha Phra Center?	Yes = 6	11.3
		No = 45	84.9
		No Response = 2	3.8
3.	Has Respondent Seen Agricultural Information Bulletins Produced at the Tha Phra Center?	Yes = 4	7.5
		No = 48	90.5
		No Response = 1	1.9
4.	Is Respondent Familiar with the Soil Analysis Service Provided by the Tha Phra Center?	Yes = 9	17.0
		No = 37	69.8
		No Response = 7	13.2
5.	Has the Respondent heard Radio Programs Produced at the Center?	Yes = 31	58.5
		No = 22	41.5
6.	Has Respondent Listened to Market News on the Radio?	Yes = 30	56.6
		No = 22	41.5
		No Response = 1	1.9
7.	Is Respondent Familiar with Agricultural Price Bulletins produced and distributed by the Center?	Yes = 6	11.3
		No = 39	73.6
		No Response = 8	15.1
8.	Does Respondent Know about the Mobile Unit Sponsored by the Center?	Yes = 24	45.3
		No = 29	54.7

* Results of the survey have been interpreted with great caution. No careful sampling procedures could be followed. Nor were interviewing procedures standardized; sometimes the respondent sat alone, sometimes he or she was surrounded by family members or neighbors.

-- Only a few respondents were familiar with the Center's soil testing program, and only one had sent a sample for testing. After several months, he was still awaiting the test result.

-- Radio and TV programs produced by Center staff are widely known and much appreciated in the rural Northeast.[5] Mr. Suphat is a major media personality. Villagers know his name, the time of his programs, and the stations on which they are broadcast. We have no survey data on how often radio-proffered advice is accepted, or with what result. However, the following incident is indicative of the potential of agricultural broadcasting. On Monday, February 9, two team members visited Mr. Suphat at Tha Phra. He had just finished taping a program on "Domestic Production of Coconuts in Northeastern Thailand." The program stressed that commercial production in the region is impossible, but explained how a few trees in the house compound could be cared for adequately, and could yield a reliable supply of an otherwise very expensive commodity. Three days later, during a visit to a village in Roi Et, team members encountered a resident who had heard the Monday program. He volunteered the information that he was thinking of planting a few coconut trees. There is no way of knowing whether he will follow through on this intention, nor what the consequences are likely to be. However, the incident does illustrate the immediate impact that broadcasting can give to extension efforts.

-- Many respondents listen to market news on the radio. It is not clear that they receive this news exclusively from Center programs. Several provincial extension officers in the Northeast offer weekly radio programs, and may also provide information on current commodity and input prices. In any case, this information source is much appreciated. Documentation of its usefulness, however, would require detailed knowledge of production and marketing activities of selection of Northeastern farmers.

-- Only a few respondents are familiar with the agricultural price bulletins produced weekly by agricultural economists at the Center. The bulletin is sent to 600

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[5] In Sakhon Nakhon province, a majority (11 out of 17) of respondents were unfamiliar with Center-produced programs. However, large areas of the province (including one of the villages visited) lie in a broadcasting "shadow" behind a mountain range.

addresses in the Northeast, and availability (at no cost to the subscriber) is occasionally mentioned on Center radio programs. Listeners who write to request this publication are duly entered on the list of subscribers. However, it is our impression that knowledge of this free service is generally limited to those who belong to farmers' groups or have close ties to an individual subscriber.

-- Many respondents are familiar with the Center's Mobile Unit program. Our sample exaggerates general knowledge of this program, since three of eight villages visited were selected because they had been visited by the Unit in recent months. However, residents of other villages had heard about the Mobile Unit on Center-produced radio programs, and, perhaps, by word-of-mouth.

IV. CONCLUSIONS

Northeastern Thailand is economically and socially dynamic. Innovations are readily apparent in agriculture, transportation, and other spheres. Migration is pervasive. In a few days of field visits, we learned about instances of: rural-rural movement within the region; rural-urban movement within the region; seasonal migration to Bangkok or rural areas in Central Thailand; and migration to the Middle East under one and two year contracts. Numerous private firms are active in the region, providing their own extension services, among other things. Within this complex, dynamic setting, the impacts of a single institution are difficult to detect and nearly impossible to measure.

Original AID project documents established increased agricultural production, diversification of production, and alleviation of rural poverty as strategic objectives. (See section I-D.) These goals were to be achieved through (1) construction of facilities, (2) institution building, (3) staff training, (4) development of a research program, (5) publication of results, and (6) establishment of an extension program.

Success in meeting these goals has been mixed. An excellent physical facility has been built, but it is understaffed. A large number of scientists have been trained, but most of them work in units other than the Center. A research program was developed, but a lack of staff, budgetary support, and bureaucratic c'out have severely undercut its effectivenss. Research results have been released in Center reports, but Ministry and University officials point out that there has been little work published in major journals. Great energy and

creativity have gone into establishment of extension and outreach programs.

There is little evidence that research priorities at the Center were ever strongly influenced by the opinions or perceived needs of Northeastern farmers. Nor does there seem to have been much in the way of "on farm" or "farming systems" research. In short, there is little evidence of collaboration with farmers. We take these limitations to be the result of the kind of training which trainees received. Many Ministry researchers would benefit from exposure to ideas on cropping systems research propounded by Richard Harwood.[6] They also need to familiarize themselves, through regular face-to-face interaction, with the intricate production decisions which even the smallest, poorest farmer faces.

Most Center outreach activities (radio and TV programs, the Mobile Unit, the marketing newsletter) have been initiated since completion of the Kentucky Project. However, they have been accomplished largely by individuals trained under the Project and can be attributed, in part, to it. We talked to villagers who were familiar with these activities and approved of them. A few informants indicated that they had accepted, or were about to accept, advice provided. However, the final links in the "impact chain" (acceptance of innovations and achievement of positive results) are the most difficult to observe. Here we must rely on vague impressions.

Many outreach activities currently carried out by Center personnel have great potential, but are severely underfunded. For example, radio programs are recorded largely on borrowed equipment. A small grant for studio equipment could give this activity a significant boost. The Mobile Unit also operates with borrowed equipment. A small grant is also in order here. (For more ideas on "opportunities" in the Northeast see Appendix D.)

There is strong evidence that bureaucratic units outside the Center were more concerned with training their employees than with supporting research capacity and institutional stability at the Center. However, we count training of 118 individuals, even if they are scattered across a number of bureaucratic units, as a worthwhile investment, probably already repaid in enhanced research quality and administrative effectiveness within the Ministry. Unfortunately, many of these officials will exert their influence from other regions

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[6] See especially R. Harwood, Small Farm Development: Understanding and Improving Farming Systems in the Humid Tropics (Boulder, Colorado: Westview Press, 1979), pp. 32-41.

in Thailand and their work will not be directly responsive to the needs of Northeastern farmers.

As the Center became an administrative reality, officials in other departments came to see it as a competitor for resources (budgets, external aid, personnel, etc.) and also as a locus for exploitable resources; the initial intellectual attraction of the Center concept receded into the background. The net effect of these offsetting forces was that significant research activities at the Center were administratively "doomed" in the late 1960s, but were temporarily protected by a sort of cordon sanitaire until completion of the University of Kentucky project in 1975.

Among University of Kentucky officials, doubts about broader impacts and the long term viability of the Center must have arisen at a fairly early date. However, it was relatively easy to overlook these doubts knowing that a functioning research Center would be handed over at the conclusion of the project, and solid accomplishments had been made in establishing training and research.

USAID officials were in a position to recognize project weaknesses well before the end of the Kentucky contract. Staff records clearly indicated that Departments and their employees were not honoring post-training service commitments; the research being carried out was not multidisciplinary or closely attuned to the needs of farmers; and little extension work was being done. University of Kentucky officials described these problems in their annual reports. AID officials should have recognized the problem of bureaucratic impotence by the early 1970s and done something about it. They could have (1) pulled out; (2) decided to support only promising portions of the project (e.g., training); or (3) worked with the Ministry to strengthen the bureaucratic position of the Center. That none of these things happened reflects negatively on responsible AID officials, but more so on incentives provided by AID structures and procedures. AID officials face a series of disincentives and barriers which make it difficult to re-examine and redesign projects already well along in the implementation phase. The "pressure to obligate" and the need to maintain stable relationships with host government officials make any new initiative at this point singularly unattractive. Moreover, there are few explicit rewards in the AID personnel system for actions of this type.

V. LESSONS LEARNED

1. In institutional development projects "bureaucratic fit" is an important issue which should be treated carefully during both project planning and implementation. Institutions

which do not find the right "niche" in the administrative structure will be weak and ineffective.

2. The basic assumption of institution building projects should be that they will evolve in ways unforeseen during the design phase. A central objective should be to create an institution that is flexible and effective under a variety of conditions.

3. Project planners and administrators should expect to make major readjustments in order to maintain project viability. Successful accomplishment of this goal requires frequent reaffirmation of consensus among all interested parties.

4. Project planners and administrators should be aware of the possibility that the advisors and funds provided under technical assistance contracts may shield a project from direct bureaucratic opposition while they are present, but not from indirect incursions while they are present, or from direct assault after technical assistance is withdrawn.

5. Present AID procedures and incentive structures do not provide sufficient encouragement to individuals and administrative units to seek out, analyze, and do something about implementation problems. An understanding of this fact is central to any effort to "do something about implementation." We suggest that the following measures be taken:

-- In order to provide stronger individual incentives for re-examination and re-design of projects, AID professionals should be subjected to a detailed, retrospective review of their development work by a committee of peers at five year intervals. (For more detail on this proposal and others, see Appendix C.)

-- In order to ensure closer Mission and Bureau attention to re-examination and re-design, all projects should be reviewed for possible mid-course correction one or two years into the implementation phase.

-- Large, complex projects should be divided into modules. This will provide AID officials with a more flexible negotiating position, will allow for approval of modules as specific threshold goals are met, and will facilitate termination of failed project components while retaining (and perhaps enhancing) those that work.

Appendix A

EVALUATION METHODOLOGY

EVALUATION METHODOLOGY

The evaluation was carried out in several phases:

-- A predeparture phase (Jan. 1-31, 1981) in which Calavan, DeBoer, and Wilson located and read USAID documents related to the establishment, organization, work, and milieu of the Center. During this period, USAID/Bangkok recruited Dr. Isara and Mr. Paithoon as members of the evaluation team.

-- A Bangkok phase (Feb. 4-5) during which team members interviewed a number of people associated with the Center, both past and present. USAID officials also briefed the team and we spent time in the USAID library reading relevant documents.

-- A Khon Kaen phase (Feb. 6-10) during which team members interviewed members of the Center Staff, continued the library research, and established contact with agriculturists who worked in a number of governmental units which sometimes cooperate with the Center.

-- A field phase (Feb. 11-14) in which team members visited a total of eight villages in Khon Kaen, Sakon Nakhon, Roi Et, and Maha Sarakhan Provinces and carried out 53 interviews. Responses to a simple survey form allowed us to make a rough assessment of the significance of NEROA research, service, and extension activities for Northeastern Thailand.

-- A writing phase (Feb. 16-19) during which we stayed at Wang Kaew, Rayong Province and prepared the first draft of this report.

The first week (February 4-10) was devoted to assessment of past and present strengths and weaknesses of the Center. We wanted to learn about: quantity and quality of research completed and in process; planning, public service, and extension activities; the role of the University of Kentucky as contractor between 1967 and 1975; the significance of the training component of the project; the bureaucratic/institutional setting of the Center and the present "mood" of the institution and its employees. We read a number of documents. Written materials were especially useful in providing detailed information on research and training components of the project; Center reports and a recent study of Regional Agricultural Offices conducted by the National Institute of Development Administration were of particular interest.

However, our major strategy was a series of unstructured interviews; present employees, former employees, and Ministry officials who cooperated with Center research and extension efforts were included. Our usual strategy was to raise a very general question (e.g., "What do you think about the present state of the Center, and what changes should be made?"). Follow-up questions were largely aimed at clarification of names, dates, administrative arrangements, and similar details. All of our informants are busy people, but each responded enthusiastically to an opportunity to discuss this topic. Opinions expressed were diverse and contlicting, thus rendering a useful, "real world" view of a complex, evolving institution.

We then devoted four days (February 11-14) to a field assessment of the impact of Center research and extension programs on farming practices and village life in Northeastern Thailand. A survey form was devised which tested villager knowledge of, and experience with, a variety of Center programs (see Exhibit A-1). We carried out 53 interviews in eight villages (see Exhibit A-2 for a map of areas visited).

We gained entrance to villages in each province through letters of introduction written by the Training Director for the Department of Agricultural Extension in the Northeastern Region. In each case, the letter was presented to the Provincial Agricultural Extension Officer or his deputy. This official was briefly interviewed in each case, and provided guidance in locating "a non-progressive village" and "a village where the Center's mobile unit has visited recently." We then received assistance in locating villages and meeting villagers from a subordinate extension official working at the district or subdistrict level.

After reaching a village, each interviewing team proceeded to carry out two to four interviews in a expeditious fashion. We spoke to adults of both sexes and attempted to locate residents of poor, modest, and fairly elaborate houses. Teams dispersed to different parts of the village. Extension officials who accompanied the interviewers occasionally listened and observed, but were not allowed to ask questions, express opinions, or otherwise "shape" opinions during formal interviews. They did, if course, provide significant background data as we traveled to and from the villages.

During the survey we worked in pairs. Each Thai (Isara, Paithoon, and Jureerat, a USAID employee) was accompanied by an American (Wilson, DeBoer, and Calavan). The American team member ordinarily recorded most of the data, while the Thai member carried out the interview in Central and Northeastern Thai and provided English translation when necessary. (Calavan and DeBoer speak and understand Thai well.) The survey form took 10-20 minutes to administer, and information contained therein

was supplemented by 10-30 minutes of "freeform" questioning about household economic activities. As a result of these short interviews, we gained a rough comprehension of household economic status and openness to agricultural innovation, as well as their knowledge of Center activities.

In retrospect, we regret that we did not collect, in orderly fashion, additional data on our respondents and their households. For example, information on education levels, land holdings, and nonagricultural occupations could have provided a basis for differentiating responses by class or wealth categories. Some of these data were collected some of the time, but not in sufficient quantity to make such disaggregation useful.

Survey results have been interpreted as if each form represents a single household. In reality, this was seldom the case. Many interviews began with a single respondent but ended with many, as family members, neighbors, and passersby entered the discussion. While every effort was made to record the opinions and knowledge of an individual representing a single household, the process was frequently "corrupted" by interjection of opinions by those not being interviewed. The effect of these comments was not entirely negative. Sometimes, opinions expressed or information provided brought interesting new elements into the discussion. Our brief visits; simple, quickly-drafted survey form; and small, crudely selected sample dictate caution and humility in interpretation of results. However, four team members have substantial previous research experience in rural Thailand, and we believe that modest generalizations are justified.

Adequate measurement of the <u>impact</u> of Center research and outreach programs on the income and welfare of rural households must await more detailed, long term research. Detailed observations on inputs (of land, labor, cash, seed, improved new fertilizers, innovative techniques, etc.) and outputs (measured in yields and income) must be carried out in a number of representative households over a period of years. Readers familiar with procedures for collecting and aggregating agricultural production data in rural Thailand will understand why it would be pointless to deduce Center impacts on crop yields and total production from official statistics. The kind of household-focused data collection outlined above need not be particularly expensive, but does require work over several years. If such work had been integral to institution building efforts at Tha Phra, the impact of Center research and outreach programs would be far clearer to us now.

Exhibit A-1. Northeast Regional Office of Agriculture
Impact Activities in Northeast Villages

Location Village _____ Tambol
Amphoe _____ Changwat _____

I. General Questions for Discussion

A. What are the general problems the farmer has? _____

_____

B. What government agencies have helped or worked with the farmers? _____

C. Who can help the farmer the most to improve his standard of living? _____

D. If the farmer had a better market and higher prices could he produce more? _____
What specific crops? _____
What specific livestock? _____

E. If the farmer has a farming problem, where does he go for help or advice? _____

II. Training Activities

A. Direct Office Activities

1. Has the farmer been trained at the Center?	Yes	No
2. Does he know anyone trained at the Center	Yes	No
3. Does the Center train all types of farmers or only "important" farmers?	Yes	No
4. Does the Center train young farmers as well as older farmers?		

5. If farmer trained at Center,
   a. What type of training did he have? _____
   _____
   b. How long was the training and when did it take place? _____
   _____
   c. Who sponsored the training?
      Center itself _____
      Dept. of Extension _____
      Dept. of Agriculture _____
      Dept. of Coop. Promotion _____
      Other (Specify) _____
   d. How were you chosen to participate in the Training Course?
   _____
   e. Who were the trainers? _____
   _____
   f. How useful was the course? _____
   _____
   g. Was the course too advanced, too difficult to understand? _____
   h. What practices learned in the course are you now using on your farm? _____
   i. Did you use your training to help other farmers? Yes No

III. Research Activities
   A. 1. Has the farmer been to a Tha Phra field day? Yes No
      2. If Yes, what was his opinion of the research he observed? _____
      3. Were the research results useful to his situation?
      _____
   B. Has the Village participated in Center research activities? Yes No

C. Has the farmer participated in Center research activities? Yes No

D. Does the farmer know anyone who has participated in Center research activities? Yes No

E. Does the farmer know anything about the Center's research activities? Yes No

If Yes, what has he heard about the research and its value to farmers? _____

IV. Extension and Information Activities

A. Have you ever seen Research Bulletins or Leaflets from the Center? Yes No

If Yes, how useful were they? _____

B. Do you know how to get these Bulletins or Leaflets if you were interested in one? _____

C. Soil Analysis Service

1. Does the farmer know about the service? Yes No

2. If Yes, has he ever used it?

If not, why not? _____

If yes, were the results useful? _____

Did the farmer follow the recommendations? Yes No

If not, why? _____

3. Do other farmers use the service? Yes No

Do they find it useful? Yes No

D. Radio Program

1. Have you heard about the program? Yes No

2. If Yes, have you ever listened to the program? Yes No

3. If Yes, what parts of the program do you use? _____

4. Have you ever sent a letter to the Center? Yes No

5. If Yes, did the Center answer? Yes No
   Was the answer useful? Yes No
   Could you understand the answer? Yes No

E. Market News

1. Do you listen to Market News on the radio station? Yes No
2. If Yes, what is your opinion of the service?

   _____

3. How could the program be made more useful to the farmers? _____
4. Do you know about the Agricultural Commodity Price Bulletins? Yes No
5. If Yes, do you think it is useful? _____
6. How would you make it more useful to the farmers?

   _____

F. Mobile Unit

1. Do you know about the Mobile Unit? Yes No
2. If Yes, has it ever visited your village? Yes No
3. If Yes, how many times? _____
4. When was the last time the Mobile Unit visited your village? _____
5. What was the subject the Mobile Unit discussed?

   _____

6. Was the visit useful? Yes No
7. How could it be made more useful?

   _____

Appendix B

ADDITIONAL DATA ON THE PROJECT

Table B-1. A Tabular History of the Tha Phra Center

Year	Period	Events at Center	Events in MOAC	Events in USAID	Other Factors
1962					
1963	A Good Idea Is Made Concrete	Land is acquired			
1964		First trainees go to U.S.			
1965				University of Kentucky contract is drafted & signed	
1966		Construction of buildings proceeds			
1967			Department and Offices send employees to Center, some not "first-rate." Department Official report to DGs, control budgets & research priorities		War in Viet Nam makes Government increasingly sensitive to needs of Northeast Region
1968	Optimistic Work Toward a Significant Goal	Training program well-established			
1969					
1970					
1971					
1972	Apparent Maturity	Substantial amount of research accomplished. Training program proceeds apace, testing program established		Kentucky Project provides cordon sanitaire. University of Kentucky personnel express some doubts.	
1973					
1974					
1975					
1976	Bureaucratic Redefinition and Bureaucratic Counterattack	Role redefined. Field projects established by few researchers. Radio/TV programs Mobile Unit Program Testing Program continued. Marketing News initiated.	Department of Agriculture trainees end up concentrated at Bang Khen		
1977					
1978					
1979					
1980			Role of Center being renegotiated		National Institute for Development Administration Report
1981					

Figure B-1. Organization Chart of the Tha Phra Center

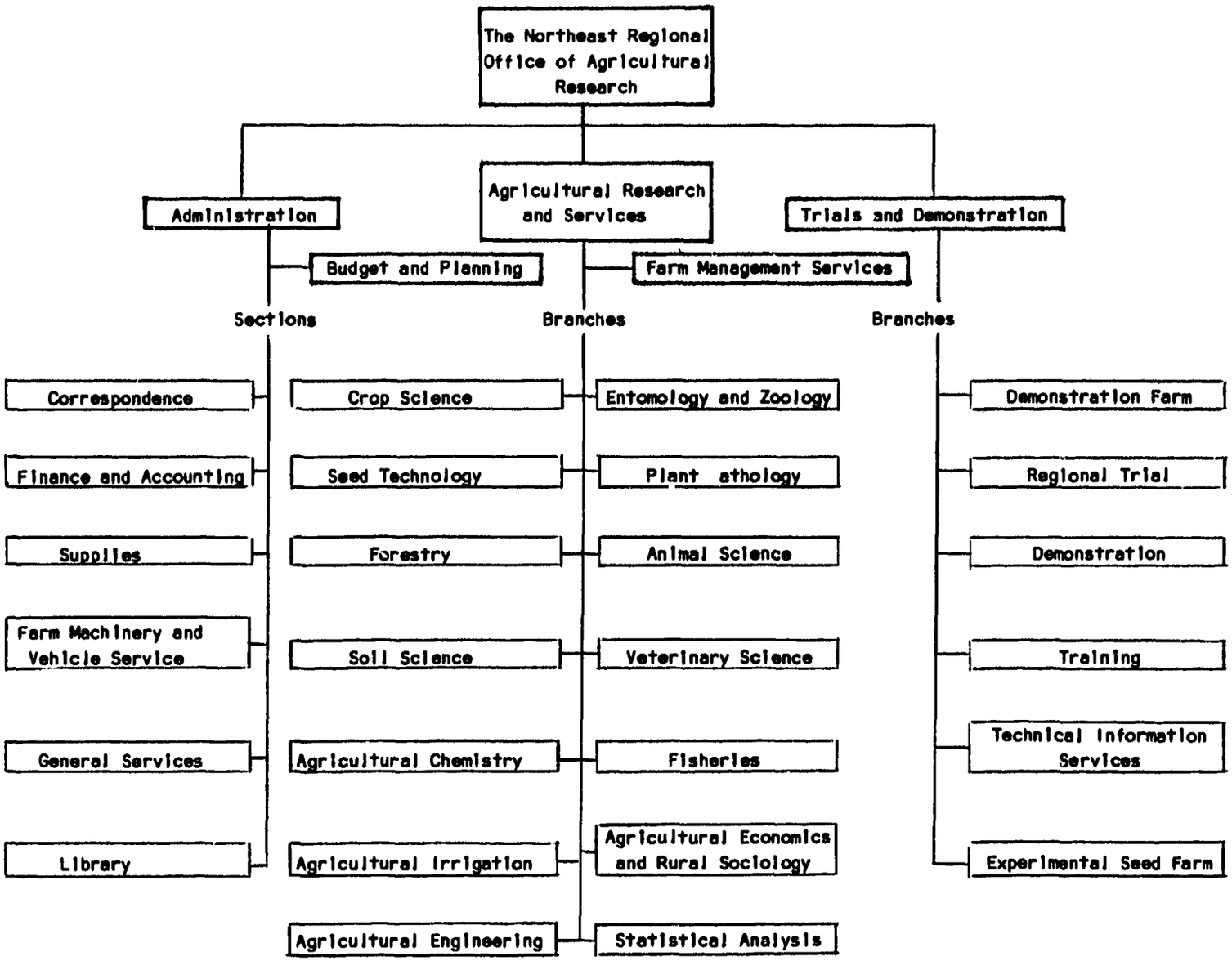

Table B-2. Funding Summary for the Tha Phra Center, 1966-1978 ($000)

Funding Source	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total
USAID	140	385	945	745	815	770	780	715	710	540	0	0	0	6,545
Thai Government	275	345	585	690	585	500	560	590	525	690	670	580	495	7,090
Total	415	730	1,530	1,435	1,400	1,270	1,340	1,305	1,235	1,230	670	580	495	13,635

* Northeast Regional Office of Agriculture, 1967-1976 (in Thai), Tha Phra, 1977.

Exhibit B-1. Extension and Service Activities (1967-1980)

-- Broadcast agricultural radio programs
-- Mailed agricultural leaflets in response to mailed requests
-- Demonstration and training
    a) Cooperated with Extension Department in training 232 4-H members consultants, and farmer leaders
    b) Managed seminar for information exchange program of 4-H members
    c) Cooperated with Extension Department in training 211 housewife members of farmer groups
    d) Cooperated with Accelerated Rural Development Department in managing seminars for farmer groups who got credit from the bank in Sakon Nakhon and Udornthani Provinces
    e) Trained 118 district extension officiers for three months and conducted demonstrations on fruit tree grafting after completion of training. There were 500 participants in this demonstration
    f) Trained 960 villagers from Udonthani Province in self-protection and development volunteer program for the Ministry of Defense
    g) Trained 274 agriculture leaders from the Northeast
    h) Trained 290 students from Kasetsart University
    i) Provided demonstration and lectures to 21,074 people (farmers, students, and other government officers)
    j) Produced seven demonstrations for TV channel 5, Khon Kaen
    k) Produced 39 TV shows on how to improve agricultural production in the Northeast for channel 5, Khon Kaen
    l) Presented three field days at the Center. 3,500 people attended these activities
    m) Distributed 48,320 leaflets
    n) Answered farmers' questions
-- Provided demonstration plots for
    a) Soybean, mung bean, peanut, corn, sesame, castorbean
    b) High yielding variety of papaya
    c) Farm forum project
    d) Pilot farm management study

RADIO AND TV PROGRAMS PRODUCED AT THE CENTER

Three different television programs are broadcast over Channel 5, Khon Kaen. They are:

-- For the Farmer's Life--Offered one night each month at 7:30-8:00 p.m. In February 1980, the topic was "Agricultural Irrigation."

-- Agriculture for People--Broadcast each evening at 6:20-6:25 p.m. Topics covered in July 1980: "How to grow sweet potatoes," "Rice seedling transplantation and water level management," "Chemical fertilizer application in flooded rice fields," "How to select mango varieties," and "Herbicide toxicity and your crops."

-- Special Programs--Offered at irregular intervals, 10 times in 1980.

Four radio programs are broadcast from stations at Khon Kaen and Maha Sarakham. They are:

-- Agriculture for People--Broadcast each Sunday at 10:00-10:30 a.m. over Radio Thailand, Khon Kaen and Kasetsart University's station, Khon Kaen.

-- For the Farmer's Life--Broadcast each weekday at 2:15-3:00 p.m. over Radio Thailand, Khon Kaen and Radio Thailand, Maha Sarakham.

-- News for Farmers--Broadcast daily at 8:30-8:35 p.m. over Radio Thailand, Khon Kaen.

-- The 4H Program--Broadcast weekdays at 4:45-5:15 a.m. over the Army radio station, Khon Kaen. The standard format is as follows:

Opening
News or interview--5 minutes
Musical interlude ("country" music)
Agricultural knowledge--10 minutes
Musical interlude
Reply to listener's letters--5 minutes
Home economics - 5 minutes

Many listeners write letters in response to the radio programs. Often, they request leaflets from the Center, and most raise questions about some farming problems. When necessary, these questions are transcribed and sent along to Center scientists. The scientists' answers are incorporated into written replies. In addition, representative or interesting questions and answers are read over the air. A few recent letters were examined. Topics included: care and feeding of chickens, care and feeding of ducks, vaccination of chickens, causes and solutions for yellow "spots" and discolored water in flooded rice fields, and an inquiry after a soil sample sent to the Center for testing.

Appendix C

CHANGING INCENTIVE STRUCTURES

I. CHANGING INCENTIVE STRUCTURES

USAID/Bangkok employees did not react to readily-available evidence that some aspects of the Project were not proceeding according to original plans. Agency employees, in general, need stronger incentives for re-examining and reorganizing unsatisfactory projects mid-course. It is useful to visualize two extreme approaches to this problem: "reformist" and "utopian." The former requires changes in bureaucratic procedures and regulations. The latter implies structural change. We propose reform in three key areas: (1) imposition of timely, serious re-examination of projects on their managers, (2) making planners and implementors individually responsible for the success and impact of projects with which they are associated, (3) administration of projects in modular form.

A. Reform/Re-examination of Projects

Mission directors can do much to foster project re-examination by adopting the stance that "virtually all projects require mid-course corrections." This approach can be formalized at the mission level by requiring a formal review of all projects a year or two after implementation begins. This should include re-reading all project documents, a visit of several days to the project area, and a formal meeting in which implementation issues and problems are discussed. Ideally, those in attendance should include mission employees, host government officials, and individuals responsible for implementation in the field.

If directors are unable to enforce these standards at the mission level, they should be formalized in Washington. If necessary, project implementation hearings for all large projects and a cross-section of small ones should be scheduled in Washington. These should be conceived as part of "normal project development" and should fit logically into a smooth, continuous PID/PP/implementation/evaluation process. Current project managers as well as individuals involved in earlier planning and implementation should be present. All who attend should read project documents and be prepared to discuss major implementation problems and issues. Possible recommendations emanating from the hearing include: "bail out," "make (the following) mid-course corrections," and "carry on." The project manager should be guided, but not limited, by these recommendations.

B. Individual Responsibility

Employees will have a stronger sense of "duty" if they know that their performance of both planning and implementation tasks is to be regularly and fully assessed. We propose that the Agency carry out project planning and implementation assessments of individual professional employees at five year intervals. The purpose is not to enforce greater legal/ administrative accountability but to examine the development impact of the employee's work. Of course, no individual can be assigned full responsibility for a failed or successful project. However, the effect of examining an individual's role in several diverse projects should be salutary, especially if the assessment is regarded as both an evaluation and learning process. The hearing should be carried out by a group of peers, and should focus on the individual's own account of his or her strategies, behavior and role. The process should be essentially supportive but should result in a written narrative produced by the individual assessed and written comments from the peer review committee. These materials should be added to the employee's personnel file.

C. Modular Projects

The unpredictability of institutional development raises several questions not the least of which is the tendency for institutions to evolve in ways not planned in the original design. In the case of the Tha Phra Center, USAID/University of Kentucky stuck to its original design in spite of clear indications that the Ministry of Agriculture and Cooperatives had changed its conception of the regional research centers and that the Tha Phra Center was bureaucratically impotent. With perfect hindsight, what alternative approaches could have been taken by USAID and the Kentucky Project?

The project could have been modularized:

1. The training component could have been separated from the overall project and support increased from a total of about one million dollars and 118 trainees to substantially higher levels.

2. The institutional development aspects of the project could have been broken into several parts. This would give the Thai Government time to adjust to the new institution. For example, the University of Kentucky could have been asked to provide a pilot team for work with those Thai scientists as they became available. This could be a small team of six to eight people housed in rather modest facilities constructed in the first phase of construction.

3. This approach could lead to a more flexible negotiating position for the USAID Mission. When the Ministry provided its promised counterparts, USAID and the University of Kentucky could proceed with the next phase of the project; for example, the project goal of determining what the farmer's needs were and what types of research would be required and what type of outreach, training, and demonstration would be most useful.

4. Official recognition of the Center was a main issue in the project. Perhaps the lack thereof contributed to a fatal weakness of the Center vis-a-vis the Ministry of Agriculture. Official recognition could have been imposed as a condition for proceeding to the next module.

5. Lack of financial incentives and career advancement for service in the "Siberia of the North" (as the Center became known) reinforced its inability to attract many of the more qualified trainees as agreed to by the Ministry. After financial commitment, however, the Mission had little leverage to influence Ministry decisions to either provide official recognition, or provide significant bureaucratic support.

D. Utopia

This approach addresses issues of individual accountability and project flexibility through major structural change. Instead of proposing new bureaucratic regulations and procedures, it envisions a new approach to the organization of work. Greater individual responsibility would be achieved directly through frequent face-to-face interaction within smaller, more intimate organizations. More flexible, realistic projects are expected to result from concentration of personnel and accumulated knowledge in a few related countries. These alterations are suggested, not because they are immediately flexible, but because they assist in thinking more broadly about issues of reform:

II. AID STRUCTURE AND PROCESS--SOME PROPOSALS

A. Recruiting/Staffing

- Make "analytical skills" an important qualification for recruitment.
- Overseas rotations should not be shorter than five years.
- All AID personnel with overseas assignments should be given appropriate language and "areal" training (e.g., 13 weeks in the U.S. and an additional 13 weeks in

country before starting to work). At least two weeks of in-country training should be devoted to field study of "the structure of poverty."
- Every effort should be made to reward analytical skill, as well as those in management and technical fields.

B. Washington Structure

- Washington staff should be dramatically reduced in numbers.
- Those functions should be carefully limited--these might include auditing, training, and some evaluation.
- IDCA should approve projects larger than $50 million.

C. Overseas Structure

- Instead of one AID, there should be eight to ten U.S. bilateral development agencies, each responsible for a geographical region, and all under the auspices of an umbrella agency (e.g., separate agencies of South Asia, Southeast Asia, Central America, etc.).
- Each agency would be separately funded by Congress.
- Each agency should have a headquarters staff to be located in the region. This staff of several dozen would be responsible for some auditing, some evaluation, some research, some technical assistance to country missions, etc., and approval of projects larger than $20 million.

D. Mission Structure

- Small missions should not be divided into sector offices.
- Larger missions in larger countries should not be divided into sector offices; instead, subunits should be focused on regions of the countries in question.
- Where possible, regional teams should operate in the area where their responsibilities lie.
- Regional teams should be able to select their own projects when they are smaller than $1 million and should have discretion over at least 20 percent of their budgets.
- The mission should approve projects smaller than $20 million.

E. Field Implementation

- Prominent among those implementing projects should be members of a "development corps."

- Members of this group will be young, mostly under 35, and will accept implementation assignments no shorter than three years.

- Salary level and status will be "intermediate" between Peace Corps and AID levels.

- The development corps will be largely American, but up to 40 percent of its membership will be recruited internationally.

- AID personnel will be heavily recruited from among former members of this group.

Appendix D

SOME FUTURE OPPORTUNITIES

SOME FUTURE OPPORTUNITIES

What are some of the techniques that could be used in the poorer villages of the Northeast to provide more positive impact? Several possibilities are suggested by our village interviews and observations:

1. The impact of Center radio program could be increased. This could be done by providing one radio per head man (low option), or one radio per farmer (high option) in selected villages with information on how and when to listen to Center programs. In the poorer villages such as Hin Tak there is need for motivational training to overcome some of the pessimism suggested by replies to our questions.

2. Visits by the mobile units could be increased, with some emphasis on poorer villages. However, certain precautionary measures are suggested.

   a. It seems unwise to have mobile unit visits to a village unless there is sufficient time, money, and personnel to follow through on whatever is demonstrated, e.g., if there is a chicken vaccination program, it does not seem desirable to start the program unless there are sufficient resources to keep the program going. Otherwise the previous mortality rate will return after the program is discontinued and villagers may become more cynical about vaccination programs.

   b. Certain crop diseases were noted as major problems. However, there did not seem to be a timely procedure to distribute adequate insecticides to affected villages. Even when insecticides are available for purchase, many poorer farmers can probably not afford them. Recommendation: Plan more carefully, local fertilizer supplies based on the actual farmer needs, with provision of credit where necessary.

   c. Agricultural technology extended by government programs was said to be useful for some of more advanced (i.e., wealthy) farmers. However, for some poorer farmers it was said to be too expensive and too complicated. Recommendation: Re-evaluate techniques taught by mobile unit personnel and consult with farmers perhaps offering different solutions to those who work on small, medium, and large farms.

   d. While the soil analysis program could be useful, there is some risk that the good faith shown by some farmers in the program may be reduced if they do not receive results from soil tests within a "reasonable" period of several weeks.

3. As a possible alternative to increased government extension activities or in addition to the Center's extension program, consideration should be given to using private industry for selected crop extension work. The tobacco testing/extension/buying program of the Adams tobacco company (Thai subsidiary of an English company) could be studied to see what arrangements might be feasible for extension of other cash crops.

   The profit motive could give this sort of commercial activity greater chances of success than a regular governmental effort. Experiences in the village of Nong Kao, Borabue District, Amphoe Borabue, Mahasarakham Province bears further investigation.

4. Another opportunity lies in construction of Ong Jars. These may be built for about 50 baht each, plus labor, using simple technology. Although these jars have been used for years in the central plains and in the south, only recently, the jars have been introduced in the Northeast. These jars offer a significant alternative for water storage during the dry season.

   With enhanced availability of water in the dry season, many options become available. However, some require learning new techniques. If sufficient water is available, such things as eggplant, kenaf, pumpkin, garlic, yams, peanuts, cashews, etc., may be grown, primarily to add variety to family diets and if there is surplus, it might be traded or sold in the local market.

Appendix E

TRAINING COMPONENT OF THE

UNIVERSITY OF KENTUCKY PROJECT

Table E-1. Training Received (by degree)

	Degree Received					
	B.S. Only	M.S. Only	MS/Ph.D.	Ph.D.	Non-Degree	Total
Numbers of Persons	2	71	32	3	10	118
Percent of Total	1.7	60.2	27.1	2.5	8.5	100.0

Table E-2. Present Bureaucratic Affiliation of Trainees

	Department of Agriculture	Tha Phra Center	Department of Fisheries	Department of Agri. Extension	Department of Livestock
Number of Persons	33	22	2	4	6
Percent of Total	40.2	26.8	2.4	4.9	7.3
	Royal Forestry Department	Office of Agricultural Economics	Office of Land Reform	Central Regional Office of Agri.	Kasetsart University
Numbers of Persons	1	4	1	1	3
Percent of Total	1.2	4.9	1.2	1.2	3.7
	Khon Kaen University	Department of Local Admin.	Department of Foreign Trade	Lampao Project	Total
Numbers of Persons	2	1	1	1	82*
Percent of Total	2.4	1.2	1.2	1.2	99.8**

* This information was provided by Dr. Sawat Thummabood of the Center. Since the data are based on personal knowledge, rather than official records, the data may be incomplete.

** Total does not equal 100.0% due to rounding.

Table E-3. Present Location of Trainees

	Northeastern Thailand	Bangkok	Northern Thailand	Southern Thailand	Central Thailand	Total
Number of Persons	29	44	3	2	1	79*
Percent of Total	36.7	55.7	3.8	2.5	1.3	100.0

* This information was provided by Dr. Sawat Thummabood of the Center. Since the data are based on personal knowledge, rather than official records, the data may be incomplete. This total figure does not coincide with that in the previous table since informant knew only bureaucratic affiliation of some trainees and only geographic location of others.

Appendix F

SUMMARY OF RESEARCH AND EXTENSION ACTIVITIES AT THE THA PHRA CENTER, 1967-1980

Table F-1. Summary of Ten Years (1967-1976) of Research at Tha Phra Center on Field Crops and Vegetables

Crop	Variety Selected	Agronomy	Soil + Fertilizer	Pathology and Entomology	Cropping System Trials	Seed Technology
Rice	-High yield variety -Disease resistant variety -Salinity tolerant variety	-Suitable water level -Herbicide trials	-Optimum fertilizer rate -Effects of sources of N -Trace element trials -Green manure vs. chemical fertilizer -Phosphate fertilizer -Ammonium fertilizer on availability of potassium	-Fungicide trials -Survey of insect pests -Population dynamics of gall midge		-Storage -Dormancy
Kenaf (Thai)	-High fiber yield variety -Disease resistant variety	-Planting period -Top cutting -Water utilization	-Important essential elements -Optimum fertilizer rate	-Fungicide trials -Survey of insect pests -Insecticide trials -Times and rates of insecticide used -Root knot nematode	-Crop rotation with legumes -Intercropped with legumes	
Kenaf (Cuba)	-High fiber yield variety	-Optimum spacing -Suitable planting date	-Optimum fertilizer rate			
Jute	-High fiber yield variety for long pod type -High fiber yield variety for round pod type -Disease tolerant variety	-Suitable planting date		-Survey of economic pests -Insecticide trials -Gamma ray used to induce resistant varieties		
Cotton	-High yield variety -Insect resistant variety -Insect tolerance	-Desirable agronomic characters -Row arrangement trials	-Recommended fertilizer rates	-Selection of companion crops for trapping insects -Fungicide trials -Cause of diseases	-Suitability as second crop after rice	-Seed treatment for disease free status

Table F-1. Summary of Ten Years (1967-1976) Research on Field Crops and Vegetables (cont.)

Crop	Variety Selected	Agronomy	Soil + Fertilizer	Pathology and Entomology	Cropping System Trials	Seed Technology
Mulberry				-Rate of fungicide used -Serious diseases surveyed -Survey of root knot nematode -Physical treatments for disease trials		
Soybean	-Insect tolerant variety	-Population density for weed control -Soil mulching -No tillage planting -Dry season planting date -Normal season planting date -Water table level study -Study of water balance	-Nitrogen and Phosphorus balance -Rhizobium effects -Optimum nitrogen fertilizer	-Life cycle of insect pests -Insecticide trials -Survey of insect pests -Economic pests		-Storage technique -Seed testing for fungi incidence
Peanut	-High yield variety -Disease resistant variety	-Population density -Material for planting -Planting date -Mulching and furrow making -Study of water utilization	-Different sources of calcium -Optimum fertilizer rate -Recommended fertilizer rate	-Insecticide trials -Survey of serious diseases -Control of insect pests -Population dynamics of economic insects and their control -Spore forecasting -Control of root knot nematode		-Control of seed aflatoxin -Seed multiplication program -Seed testing for fungi incidence

Table F-1. Summary of Ten Years (1967-1976) Research on Field Crops and Vegetables (cont.)

Crop	Variety Selected	Agronomy	Soil + Fertilizer	Pathology and Entomology	Cropping System Trials	Seed Technology
Mung bean	-High yield variety	-Spacing and population density -Water management	-Maximum fertilizer rate -Lime application	-Insecticide trials -Seed born disease -Control of some serious insect pests -Biological control of insect pests		-Seed fungi testing -Seed storage seed yield relationship
Sesame	-High yield variety -Disease resistant variety					
Corn	-High yield variety	-Study of water utilization	-Economic fertilizer rate	-Cause of diseases -Insecticide trials -Test of varieties for insect damage	-Intercropped with legumes -Suitability as 2nd crop after rice	
Sorghum	-High yield variety		-Suitable fertilizer rate -Animal manure application	-Insecticide trials -Life cycle of serious insect pests -Regional survey of serious insect pests	-Intercropped with legumes	
Tomato	-Wet season high yield variety -Cold season high yield variety -Disease resistant variety	-Pruning for yield and quality	-Phosphorous fertilizer trials	-Varieties susceptable to some diseases -Population dynamics of nematodes		-Seed collection -Seed storage -Seed germination
Banana		-Growth of different varieties	-Fertilizer application			

Table F-1. Summary of Ten Years (1967-1976) Research on Field Crops and Vegetables (cont.)

Crop	Variety Selected	Agronomy	Soil + Fertilizer	Pathology and Entomology	Cropping System Trials	Seed Technology
Cabbage		-Water application and management		-Chemical control of insects/pests -Root knot nematode -Survey of insecticides used by farmers in NE		
Watermelon	-High yield variety	-Suitable planting period		-Insecticide trials -Survey of economic insect pests in NE -Causes of diseases		
Pumpkin	-Vine-type selection -Bush-type selection					
Carrot	-High yield variety					
Sweet pea	-High yield variety					
Sweet pepper	-High yield variety					
Cantaloupe	-High yield variety					
Sweet corn	-High yield variety					
Asparagus		-Salinity effects on growth				
Chinese kale				-Insecticide trials -Root knot nematode		-Seed storage techniques
Green leaf cabbage						-Seed storage techniques
Small chili					-Crop rotation with sweet corn	-Seed storage techniques

Table F-1. Summary of Ten Years (1967-1976) Research on Field Crops and Vegetables (cont.)

Crop	Variety Selected	Agronomy	Soil + Fertilizer	Pathology and Entomology	Cropping System Trials	Seed Technology
Onion			-Recommend fertilizer rate			
Chinese-morning glory		-Seed harvesting period				-Seed storage techniquas
Lettuce		-Harvesting period		-Root knot nematode		-Seed storage techniques
Chinese radish						-Seed collection -Seed storage
Mango		-Propagation technique				-Post-harvest storage
Sweet potato	-High yield variety -Hybrid seed testing		-Fertilizer application			
Cassava			-Fertilizer application -Survey of insect pests -Nutrient requirement -Causes of some disease analysis			
Cowpea	-Green manure variety -Forage crop variety					
Millet	-Forage crop variety					
Townsville stylo		-Adaptation studies				-Methods to increase germination

Table F-2. Research on Livestock, Poultry, and Fisheries (1967-1976) at the Tha Phra Center

Category	Nutrition	Diseases and Insect Pests	Feed Analysis	Animal Health	Meat Science
Cattle and Buffalo	-Dry season supplement feeds of legumes, rice straw with molasses and urea, and hay with cassava root and peanuts -Cassava root and leaf with rice bran for fattening -Use of various rice products for cattle in hot season -Growth rate of buffalo fed on concentrates and non-concentrates -Growth rate Brahman and Zebu crosses fed on concentrates and non-concentrates	-Observations and investigation of parasitic gastroenteritis in NE -Transmammary passage of nematode larvae -Studies on Pasteurella multocide collected from outbreaks -Liquid sulfur against the buffalo mange -Survey of livestock insect in NE -Seasonal and aged variations in faeces worm egg counts of cattle -Study of hematology in water buffalo -Effects of anthelminthes on liver fluke in cattle -Survey of pathogenic bacteria of animals in NE -Disease transmission by some livestock insects -Chemical compounds against the buffalo lice -Effectiveness of Altosid against the tropical cattle tick	-Study on Chemical composition of forage crops -Survey of aflatoxin in feed stuffs	-Observation and investigation of parasitic gastroenteritis in NE -Transmammary passage of nematode larvae -Studies on Pasteurella multocide collected from outbreaks -Liquid sulfur treatment for buffalo mange -Survey of livestock insect pests in NE -Seasonal and age variations in faeces worm egg counts of cattle -Study of hematology in water buffalo -Effects of anthelmintics on liver fluke in cattle -Survey of pathogenic bacteria of animals in NE -Disease transmission by some livestock insects -Chemical compounds against the buffalo lice -Effectiveness of Altosid against the tropical cattle tick.	-Grading of slaughtered beef and buffalo

Table F-2. Research on Livestock, Poultry and Fisheries (1967-1976) (cont.)

Category	Nutrition	Animal Health	Meat Science
Swine	-Influence of Kapok meal for gilt production -Study of rations containing glutinous broken rice and non-glutinous broken rice -Use of low levels of high-grade fish meal with non-glutinous and glutinous broken rice in swine growing and finishing rations -Effects of soybean oil meal as the sole source of protein on rate of gain and feed efficiency of growing and finishing pigs -Fresh cassava diets on growth and feed efficiency of fattening swine -Various dietary copper levels as copper sulfate in rice bran - fishmeal diet for growing and finishing pigs -The use of dried and fermented cassava to replace rice bran for finishing pigs -Cassava meal affects on growth and reproductive performance of gilts -The use of peanut oil meal in growing and finishing pig diets	-Hog Cholera: Field case report in the NE -Naturally occurring acute and chronic aflatoxicosis in swine -Efficiency of some anthelmintics against nematode in swine	-Survey of slaughter swine grades in NE -Study of some important traits between swine carcass grades 2 and grade 3 at NEAC -Carcass characteristics of pigs fed copper supplemented rations -Effects of slicing, storing and curing on bacon quality

Table F-2. Research on Livestock, Poultry and Fisheries (1967-1976) (cont.)

Category	Breeding & Genetics	Nutrition	Feed Analysis	Animal Health
Sheep	-Influence of daily injections of prostagland in F_2 on semen production of rams	-Supplementation of rice straw for sheep with kenaf leaf or alfalfa meal	-Nutrient utilization, body composition and meat quality of chickens as effected by energy-protein ratio -The method to increase protein of corn and cassave through fermentation	-Hydrocyanic toxicity in broilers fed diets containing cassava -Pathological study of Leucocytozoonosis in chickens
Poultry		-Gross protein value of dehydrated poultry manure and various supplements determined by broiler chicks -Use of full-fat soybean in broiler and pullet developer diets -Method of increase for cassave protein for boilers and growers -The utilization of hen manure by laying hens and chicks -The use of peanut oil meal in broiler diets -Zinc levels in rice bran-soybean diets for broilers -Nutrient densities for broilers in the hot season -Treated cassave for broilers by cold water soaking and boiling -Treating cassava for chicks by yeast fermentation -Evaluation of housefly pupae production as a feed for broilers		

Table F-2. Research on Livestock, Poultry and Fisheries (1967-1976)

Category	Fish Production	Nutrition	Toxicology	Zoology
Fisheries	-Fish productivity of Huey Troy and Lam Pao irrigation tanks -A study on species, abundance and depth distribution of Benthos at Ban Sawang-Kiang Bay, Lam Pao irrigation tank, Kalasin province -Production of common carp and Nile tilapia in rice fields -Production of Nile tilapia in floating cages using various protein diets	-Survey of plankton in Lampao Reservoir, Kalasin province -Study on time change in nutritional values of rice bran and soybean oil meal stored at different temperature and humidities -The production of protein from low protein feedstuffs reservoir, Kalasin province and urea	-Experiment on the elimination of Cercarise carrier snails by using some chemical compounds -Toxicity of insecticides and water polluted by Kenaf rotting on some fresh water fishes	-A study on some aspects of life history of fishes in Lampao

Table F-3. Other Research Activities (1967-76) at the Tha Phra Center

Branch	Research Activities		
	Planting and Propogation	Tree Production	Extension Activities
Forestry	-A study on Seed germination of Xylia Kerrii by using different nursery media -A study on seed germination of Azadirachta Indica -A study of the effects on seed germination of Melia azadarach by soaking in sulfuric acid, hydrogen peroxide, hot and cold water for different periods -The grafting of Ma-Khamong (Afzelia xylocarpa) -Comparative study of grafting techniques for Hopea Odorata	-Planting forest of 7 plant species for 20 ha. for seed collection at Mahasarakam -Plant collection nursery of 219 species in NE -Developed botanical garden of 2 rai (1/3 ha.) -Museum of 108 kinds of wood, dry plant collection of 67 specimens and 26 seed varieties	-Distributed economic and fast growing trees: 145,823 seedlings.

Table F-3. Other Research Activities (1967-76) (cont.)

Branch	Research Activities		Service Activities		
	Marketing and Prices	Production Economics	Statistics	Marketing News	Others
Agricultural economics and rural sociology	-Economic and organizational problems relating to Thai Kenaf price -Expansion and improvement of agricultural market news in NE -Study on marketing condition of vegetables and fruit crops in Khon Kaen -Evaluation of the market news service	-Study of fertilizer adoption in NE -Fertilizer distribution and use in NE -Economic, social and organization factors that limit the use of irrigation water for off-season cropping in NE -Analysis of production practices and costs of livestock production and the availability of feedstuffs in NE -Analysis of production practices and costs of swine production in NE -Comparative analysis of alternative swine rations under village conditions in NE -Economic evaluation of a technological package for peanut production in NE -The economics of production and marketing of kenaf and jute in NE -Current production and marketing situation and near-term outlook for commodities in NE -Economic possibilities of increasing peanut production in NE -A micro-level study of the economics of dry season irrigation -Field trial of vegetable technological package for NE	-Commodity price data are collected on a weekly basis for 4 provinces: Khon Kaen, Kalasin Mahasarakam and Roi et	-Market news service on radio program -Market newsletter; 933 copies for Kalasin, Mahasaraham and Roi et and 2,889 copies for Khon Kaen	-Agricultural knowledge on radio program

Table F-3. Other Research Activities (1967-76) (cont.)

Branch	Research Activities		Service Activities		Others
	Marketing and Prices	Production Economics	Statistics	Marketing News	
Agricultural economics and rural sociology		-Factors affecting decisionmaking of farmers in a selected area of the NE -Broiler production, functions and optimum market weights			

Table F-3. Other Research Activities (1967-76) (cont.)

Branch	Development	Testing Evaluation	Facilities Development
Agricultural Engineering	-Column formulae for native Thai woods -Development of a peanut harvester	-Characteristics of shallow dug wells -Evaluation of the IRRI table thresher -Evaluation of the IRRI pre-germinated paddy seeder for rain-fed paddy in NE -Preliminary evaluation of the IRRI power tiller -Performance of the NEBC paddy drier -Performance of a Debriddhi pump -Influence of moisture content on kernel damage in rice milling	-Completed land-leveling of six research fields (8 ha.) on the main station -Completed installation of 930 meters of underground irrigation pipe -Surveyed and installed 680 meters of open ditch concrete channel between fields on the main station and additional 500 meters on the new land -Surveyed and mapped the route for asbestos-cement main irrigation water supply lines to be installed on new land -Cast 226 lengths of concrete channel block for use as surface irrigation channels -Made repairs and carried out preventive maintenance replacement of pipes and couplings for the main water supply system that serves the center -Surveyed and designed plans for construction of a water storage area on the new land to be used for irrigation purposes -Surveyed, designed and constructed a road base for the main road (1 km) through the new land -Completed plans and cost estimates for construction of a bran and loading chute for meat science research work -Designed and made construction cost estimates for a proposed horticulture head house -Designed and constructed a cassava chipper with a 5-HP engine, to be used in animal science branch -Designed and built a boom sprinkler, sprayer, mechanism for temperature control, and other items for use by researchers -Installed a drier for plant pathology -Installed a heavy duty balance for weighing animals -Serviced and made repairs on all farm machinery

Table F-3. Other Research Activities (1967-76) (cont.)

Branch	Research Activities: Development	Research Activities: Testing Evaluation	Facilities Development
Agricultural Engineering			-Serviced and repaired 48 motorcycles, 204 automobiles and trucks, and 12 tractors -Serviced and supplied irrigation water for daily use in research plots -Designed and made drawings (blueprints) for the following: a) Animal barn and loading chute b) Horticulture head house c) Crop Science laboratory d) I-beam conveyor for agricultural engineering e) New land water storage reservoir f) Plans and profile for water and irrigation lines g) Geographic and contour maps for all Center land -Miscellaneous repair jobs, including growth chambers, meat freezers, feed mills, grain threshers, etc. -Land leveling on the new Center property -Installed 1 km. of new concrete irrigation ditch -Repaired about 800 meters of concrete irrigation ditch -Designed an addition to the meats laboratory building including design of its cold storage facilities -Installed temperature control equipment for meat curing in the meat laboratory -Performed routine maintenance and repair of NEAC's farm equipment and trucks

Appendix G

USAID/BANGKOK REACTION TO EVALUATION FINDINGS

USAID/BANGKOK REACTION TO
EVALUATION FINDINGS

Comments on evaluation findings by David Bathrick, Director, Office of Agricultural and Rural Development, and John Foti, both with USAID/Bangkok.

1. The basic message gleaned from all this (evaluation effort) is that nine years and considerable external assistance does not necessarily result in an agricultural research center. This start-from-scratch effort in rainfed agricultural research (an area where no quick fixes have been developed by the international network) requires a long-term investment by both donor and donor recipient. This project only footnotes some of the recent papers prepared by TPCA which have stressed this point.

2. As AID's memory system is so dismal, it is difficult to comment in detail on a project initiated by 1962. Compounding this institutional problem (we just don't have a file or project officer to go to) since 1962, there have been numerous personnel changes within the MOAC. Consequently, it is difficult to comment specifically on many of the observations made. For that reason, it is observed that the many controversial conclusions should be supported by specific data. Many of these are flagged in the margin of the attached report.

3. The evaluation left me with the impression that there is little to show for the project efforts. The evaluation does not reflect the changing dynamics of development institutions. It is our view that resulting from the Center's earlier experience it is now making an important contribution to agricultural development in the Northeast. For example, USAID and RTG have taken the first "lesson learned" to heart and it serves as the basis for developing our recently approved Northeast Rainfed Agricultural Development project. Tha Phra institutional experience and coordination responsibilities recently delegated serves as the base from which vital farming systems type research can be conducted. In addition, at the Center there are presently 12 major MOAC-funded research projects under way. Clearly the earlier project established the institutional base, facilities and human resources from which more important research endeavors could take place. With no equivocation, there is more research investment now being carried out at Tha Phra than at any point in its history.

Accordingly, the Executive Summary concludes that the project's "efforts to build a major research capacity in Northeastern Thailand have largely failed" is not supported by fact.

4. The report does not take into consideration that all of the project objectives stated [in Section I-D] met. That obviously does not necessarily produce an "impact." It is, however, an accomplishment worthy of mention.

I hope that this mixed review of the team's research will be presented in the constructive way intended. From these evaluations all parties learn something. My only concern is that the team's thoughtful presentation will not receive the audience their work deserves unless greater attention to detail is made.

Comments on Mission reactions to evaluation findings, by A. John De Boer:

Point 1--The paper makes the point that it was not the amount of money, the length of project, or the research focus (rainfed agriculture) that caused the center to fail to achieve its original focus (a regional center of research excellence), but was instead a failure of the RTG and USAID to attack the fundamental bureaucratic problem which weakened and finally destroyed the Center's research focus and research capacity.

Point 2--The USAID office in Thailand would have access to the same project papers that we did. The consistent theme of the papers we reviewed was the above stated institutional problems, lines of authority and Center staffing problems that resulted. Problems of this type are difficult to document statistically or by specific data and in the report we were fairly circumspect in attributing blame to these evident problems.

Point 3--The overall impression of the report that we intended was that the project had a number of quite favorable results but, in most cases, the results were not directly related to long-term agricultural research objectives. Some were unanticipated because of the personalities involved and initiative shown by individual staff; some were a result of the dynamics of agriculture in the region; and some were a result of the general project infrastructure put in place in support of the research center. My opinion is the activities currently being carried out (specified in the latter part of point 3) are a result of the general infrastructure and ag service function rather than long-term research capacity of the Center which is now almost non-existent. The Center does not now have major research capacity nor does it have the general support of the

Departments of Ag Extension, Fisheries, Forestry, Agriculture, Rice, or Livestock Development to gain this capacity. Projects are being put at Tha Phra because it has the support facilities in place, has housing, and has the backing of the Under-Secretary's Office which has a great deal of power for project planning and implementation.

We simply cannot retreat on the point that major research capacity does not currently exist in Tha Phra. The staff are not there, the RTG research budget has been cut back to almost nothing, the staff who are there are all looking for transfers, and most research in the Northeast is being carried out by the Departments of Agriculture, Rice, Fisheries, and Livestock Development and Forestry, not by the Center. Just because a number of externally funded projects are being located at Tha Phra does not necessarily imply that Tha Phra is a center of research excellence.

Appendix H

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